EVALUATION OF THE QUESTIONS USED IN A POLYGRAPH TEST

By

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PREFACE

This study concerned the evaluation of the questions used in a polygraph test. The researcher, as a polygraph examiner (polygraphist), noted with great concern that the inconclusive results achieved by many polygraphists were mostly because of questions used in a criminal investigative polygraph test. Inadequate training and incorrect polygraph examination techniques were viewed as the secondary cause. Inadequately formulated questions were identified and the circumstances that provide for well-formulated questions discussed. On the basis of the findings of the study, recommendations are made for the improved formulation of questions to be used in a criminal investigative polygraph test.

The study intended to contribute further to the knowledge of fellow polygraph examiners, those with interests in the polygraph field, researchers and University of South Africa academics on how to formulate good questions for a successful polygraph examination during a criminal investigative polygraph test.

ABSTRACT

The study evaluated the questions used in a polygraph test. It focused on criminal investigative tests (also referred to as “criminal specific tests”), those tests conducted when a criminal offence has been committed and the in-test phase questions (those test questions asked to address what is under investigation).

To conduct a successful criminal investigative polygraph test, it is important that polygraphists be familiar with the types of questions used in a polygraph test and how they should be formulated for more effective outcomes. The recognition of these questions and how they are formulated is of utmost importance as it determines the success of the criminal investigative polygraph test.

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To those not mentioned, “thank you”. God knows all my thanks are from the heart and may He, according to your heart’s hunger, bless you.

DECLARATION

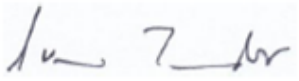
I, Muziwandile Gabela (Student No.36786632), do hereby declare that the dissertation **'EVALUATION OF THE QUESTIONS USED IN A POLYGRAPH TEST'** is my own work and that all the sources that are used or quoted in this study have been indicated by means of a complete list of references.

MUZIWANDILE GABELA

22 FEBRUARY 2013

CERTIFICATE OF EDITING

I, Susan van Tonder, MA Linguistics, ID 6009160072083, hereby declare that I have edited the master's dissertation 'Questions used in a Criminal Investigative Polygraph Test' by Muziwandile Gabela.



Susan van Tonder

12 February 2013

ABBREVIATIONS AND ACRONYMS

AIIP	American International Institute of Polygraph
APA	American Polygraph Association
CID	Criminal Investigative Department
CCMA	Council for Conciliation, Mediation and Arbitration
CQT	Control Question Technique
DOD	Department of Defense
DODPI	Department of Defense Polygraph Institute
DNA	Deoxyribonucleic Acid
Dr	Doctor
EPPA	Employee Polygraph Protection Act of 1988 (Act applicable in the USA)
fMRI	functional Magnetic Resonance Imaging
GKT	Guilty Knowledge Test
HPCSA	Health Professional Council of South Africa
LC	Labour Courts
NIA	National Intelligence Agency
NAS	National Academy of Sciences
NRC	National Research Council
PASA	Polygraph Association of South Africa
R & I	Relevant and Irrelevant
RSA	Republic of South Africa
SANDF	South African National Defence Force
SAPPA	South African Professional Polygraph Association
SAPS	South African Police Service
SPOT	Search Peak of Tension

SSA	State Security Agency	
Unisa	University of South Africa	
USA	United States of America	
w.w.w.	World Wide Web	
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CHAPTER 1
GENERAL ORIENTATION

1.1 INTRODUCTION

The Director of the American International Institute of Polygraph, who was a lecturer of the researcher during his polygraph school days, always said: “One is as best as his last testing.” This was an explanation of the necessity for preparedness before each polygraph test. People are unique, so is each interview or interrogation. Different approaches and techniques are used for different crimes; for example, a rape case interrogation or interview cannot be approached in the same way as a case of murder or theft. Being prepared in advance allows one to carry out an intensive polygraph test and be able to achieve better results. Ferguson and Miller (1973:94) describe preparedness as:

- An understanding of a case fact for that particular test before it is conducted
- Knowing the type of question to ask and
- Knowing the reasons behind the questions to be asked

In any investigation, the primary method of proving that an offence has been committed is to gather relevant facts from people. During the information-gathering process, the investigator should interview people in order to obtain relevant facts about the investigated case. As Kirk (1974:1) incisively states: “an investigation is about talking to people in order to collect information, as people use various things to commit crime.” The criminal investigation includes gathering of information from various things that people come into contact with in the process of committing crime, whereas forensic investigation assists investigators to interpret various things in order to determine people’s involvement.

The polygraph as an investigative tool assists in verifying gathered information during criminal or forensic investigation to determine involvement, truthfulness or deception from those alleged to have been involved. This study focuses on the types of questions and the question formulations or setting up of proper questions used by polygraphists during a criminal investigative polygraph test. The information gathered in this study is also intended to assist investigators and polygraph examiners to ask concise, clear and good-quality (clear, concise questions addressing what is under the investigation) questions during the in-test phase to elicit relevant information.

The following chapter will therefore highlights all the steps that will be followed in this study to gather relevant information to address the topic, research aims and questions.

1.2 PROBLEM STATEMENT

Lourens (2007:23) argues that a study should clearly define the problem to be investigated, and how it should be investigated and that it constitutes "a plan according to which the proposed research is to be conducted in a clear and unambiguous manner". The researcher is a polygraphist with nine years of experience. The researcher's daily duties include conducting work-related polygraph tests (i.e. screening tests of applicants, criminal-specific tests and random screening of employees) and holding discussions on polygraph-related matters. During these work-related discussions, it became clear to the researcher that most polygraphists still experience problems about the types of questions and question formulation or the setting up of proper questions for the in-test phase of the criminal investigative polygraph test.

This was the same challenge the researcher experienced during his daily work. To identify challenges experienced by the polygraphists, the researcher perused and evaluated test records of finalised criminal-specific polygraph case files. Based on findings (problems about the types of questions and questions formulation or the setting up of proper questions for the in-test phase of the criminal investigative polygraph test), the researcher comes to the conclusion that the choosing, identifying and setting up of types of questions before commencing with each in-test phase provide a challenge for most polygraphists and the outcomes of the polygraph tests are therefore inconclusive. The researcher identified that some of the challenges as questions that were too long, others too short and others addressing multi-issues. This motivated the researcher to conduct the current study on the evaluation of the questions used in a polygraph test, specifically looking at those questions asked or to be asked during the in-test phase when a criminal investigative polygraph test is conducted.

1.3 DEMARCATION OF THE RESEARCH

During polygraph testing or examination, a number of tests can be conducted based on the scenario or case facts as presented. The polygraph tests include: pre-employment polygraph tests, random screening or vetting of regular employees, and criminal investigative polygraph tests. **This study focused on criminal investigative polygraph test, also known as criminal-specific polygraph test, which is a test conducted when a crime has been committed.** The focus of this study was on the preparation phase before the test commences, specifically looking at questions used or asked during the in-test phase, i.e. questions specifically asked to address what is under investigation.

Polygraph case files (finalised criminal-specific tests) were perused and evaluated within the National Intelligence Agency (now State Security Agency) environment to evaluate the in-test phase questions utilised. These were tests that covered the period between 2007 and 2010. Owing to the need for confidentiality, other departments such as the South African Police Service (SAPS),

Defence (South African National Defence Force) and private polygraph testing companies' polygraph case file records were not analysed but only cases within the State Security Agency, specifically those criminal-specific tests of theft within the work environment. The researcher obtained permission to access and analyse information recorded in these polygraph case files (see Annexure C). The researcher also worked daily with these polygraph case file records as a polygraphist within the Agency.

1.4 AIMS OF THE RESEARCH

Mark (1996:3) identifies the aims of research as being to further the knowledge of the profession and to provide answers to complex questions while Martin (2003:02) describes the research aim as "the process of going up alleys to see if they are blind". This study was about researching questions that a polygraphist asks, specifically in-test questions during a criminal investigative polygraph tests. Polygraph case file records whose results were considered to be neither deceptive nor truthful (i.e. a decision could not be reached about the results of the tests conducted) were perused and evaluated. The study focuses on the types of questions and the question formulations or setting up of proper questions used by polygraphists during the criminal investigative polygraph test.

1.5 PURPOSE OF THE RESEARCH

Denscombe (2002:24) explains the purpose of every research study as the focus and direction of that research study. According to Denscombe (2002:24), each research purpose should be able to answer what the research was trying to achieve and what the research comprised. The following were the different points that clarified the purpose of this study.

1.5.1 Criticism and evaluation of the problem

The purpose of evaluation is to assess the effects and effectiveness of something, typically some innovation or intervention, policy, practice or service (Robson, 1993:170). One of the criteria that should be met when one evaluates is "utility". This relates to ensuring that what was evaluated has the prospect of being utilised by the target audience (Robson, 1993:181). The word "purpose", according to the Cobuild Dictionary (1995:1337), means a reason for which something was done, or what one wants to achieve.

Denscombe (2002:27) notes that researchers should investigate particular programmes, procedures or policies with the intention of weighing their strength or weaknesses and considering how the situation might be improved. Polygraph case-file records analysis, as indicated in Section 1.10.3 below, was undertaken and questions were found to be poor, vague and not addressing the issue under investigation. This study attempted to eliminate the weaknesses and strengthen those questions with strong points as outlined in the problem statement.

1.5.2 Description of research carried out

Each study should aim at discovering new information that never existed before (Denscombe, 2002:27). Heppner and Heppner (2004:46) confirm that a research study understands more about the phenomenon being researched and what it all entails. More information was uncovered through interviews and a literature study, as little was known about the evaluation of the questions used in a polygraph test. There was more literature found about forensic investigation, criminal investigation and polygraphs but not about the questions used in a criminal investigative polygraph test. The researcher consulted the available literature and conducted interviews with participants to gather information on the evaluation of the questions used in a polygraph test to unearth new information.

1.5.3 Development of good practice

Researchers should be able to develop procedures or solve practical problems (Denscombe, 2002:27). New information was gathered through various data-collection techniques (see Section 1.10 below), which contributed towards the development of good practices and standards for the formulation or setting of in-test phase questions that will be used during criminal-specific polygraph tests. Strong aspects of questions identified were strengthened and weak points eliminated for better question formulation to promote good practice.

1.5.4 Empowerment

A clear presentation of polygraphs from a modern viewpoint, expanding the traditional perspective of the practitioner, could foster progress in the field, and promote understanding, cooperation, study and development of polygraphs (Kleiner, 2002:xi). This research also concerned empowering the researcher, other polygraph examiners, fellow researchers, students, industry (government departments that utilise polygraphs), the community and the University of South Africa (UNISA), in three main ways (Janesick, 2004:231-232) as follows:

- The findings offer guidelines on question formulation and how questions get chosen during an in-test phase in a criminal investigative polygraph test as it is currently a challenge
- Current and future practitioners of the polygraph will be empowered by using this research, as it will serve as a reference on question formulation and the choice of questions during an in-test phase
- The study will provide a greater understanding for those who have interests in the polygraph field by offering simple steps to follow in formulating questions and how they get chosen during an in-test phase that provide a solution in any investigation where polygraph is utilised

1.6 RESEARCH QUESTIONS UNDER INVESTIGATION

The research questions drove the study project to its conclusion. When the research questions of a research project have been answered, the objective of the study project has been met (Liamputtong & Ezzy, 1999:291). The research questions were as follows:

1.6.1. What is the polygraph test?

1.6.2. What are the types of questions that can be used during a criminal investigative polygraph test?

1.7 KEY THEORETICAL CONCEPTS

Martin (2003:15) has indicated the purpose of defining concepts as clarifying the important relationship of these concepts within the dissertation for the better understanding by the reader. This section seeks to limit any potential confusion brought about by the use of specialist terms and to inform the reader about the manner in which the researcher uses certain terms and the meaning assigned to these terms in the dissertation (Janesick, 2004:231). The following are the key theoretical concepts used in this study.

1.7.1. Interviewing

Yeschke (1997:173) defines this concept as a process of gathering testimonial evidence through interviewing and it has a predetermined objective; namely, the discovery of the truth about the matter under investigation. The researcher understands interviewing as the gathering of new information by way of asking relevant questions to what is under investigation.

1.7.2. Polygraph

Martin (2003:15) defines a polygraph as “a mechanical instrument that records physiological responses to questioning. It records blood pressure, pulse, respiration, galvanic skin resistance, chest and abnormal breathing patterns.” The researcher understands polygraph to be a scientific instrument that gathers physiological based on the questions being asked.

1.7.3. Questioning

Questioning as it is used in a research interview is defined as a direct or implied request for the interviewee to think about a particular matter (Yeschke, 1997:174). The researcher understands questioning as asking for clarity based on a particular matter under investigation.

1.7.4. Deception

Deception is the successful or unsuccessful deliberate attempt, without forewarning, to create in another a belief which the communicator considers to be untrue (Granhag & Stromwall, 2004:4). The researcher understands deception to be a reaction that indicates an untruthful response.

1.7.5. Suspect

A suspect as referred to in this dissertation is a reluctant witness who possesses desired information under investigation (O'Hara & O'Hara, 1994:10). The researcher believes a suspect to be someone who, based on gathered information, has directly or indirectly involved in what is under investigation.

1.7.6. Polygraph examiner (also known as polygraphist)

This is an individual who is trained to administer polygraph testing (Ferguson & Miller, 1973:94). The understanding by the researcher of a polygraph examiner is that it is a trained individual to conduct polygraph tests.

1.7.7. In-test phase

Also referred to as "data-collection phase", it is the phase or stage where reviewed and correctly formulated test questions, to be answered by "Yes" or "No", are asked (Matte, 2000:87). The researcher understands an in-test phase as the stage or phase where reviewed questions are chronologically asked.

1.7.8. Countermeasures

These are deliberate attempts or efforts by the subject being tested, designed to mislead, with the intention of making the examiner believes they are telling the truth on the issue under investigation, (McManus, 2008:75). The researcher understands countermeasures to be those attempts by an examinee to mislead the outcome of the test.

1.8 RESEARCH METHODOLOGY

Qualitative methodology comprises research that involves asking questions, while quantitative research involves numeracy or numbers (Darlington & Scott, 2002:120-121). Qualitative research can be considered a self-reflective and introspective journey because the researcher listens to the stories of other people, retells their stories in the way they (those who tell their stories) understand them or reconstructs stories with participants (Heppner & Heppner, 2004:139).

A qualitative study framework was used as one of the methodologies in this study, as it involved an in-depth investigation of knowledge, employing literature sources, interviews, polygraph case file record analysis and personal experience to analyse the information collected (Grix, 2010:120). In a qualitative study, a researcher attempts to understand people in terms of their own definition of their world (Mouton, 2001:194). In terms of this study, the researcher obtained this understanding by conducting interviews with participants.

Hagan (2005:19) has argued that qualitative study or methodology concerns ideas and understanding of concepts by individuals. Qualitative methods were therefore selected as they best addressed the researcher's research questions and aims. Silverman (2000:177) defines triangulation as the utilisation of multiple methods to collect or gather information, as an attempt at a "true fix" (analyse) on a situation/s. According to (Grix, 2010:136), this is employed to ensure that balanced information from all angles is obtained and to answer the research questions and aims of the study.

1.8.1 Research design

A research design is an exposition of how the researcher decides to approach the formulated problem. The objective of the research design is to plan, structure and execute the project concerned in such a way that the validity of the findings is maximised (Mouton & Marais, 1990:193). The researcher utilised an empirical research design to obtain a study that was qualitative in nature and which aimed at providing in-depth description of a group of people or community (Mouton & Marais, 1990:193).

The study also involved the researcher's collecting of his own data or analysing of existing data (Mouton, 2001:xiii). Empirical study is about going to the field to gather data or information (Mouton, 2001:98). Denscombe (2002:6) defines the empirical design as a design or process of getting out of one's office and chair to gather information in the field. This type of study also involves direct contact with relevant people (Denscombe, 2007:72). As the information from the literature that related to question formulation during a polygraph test was limited, the researcher opted to follow an empirical design to gather more information from individuals through interviews and case file analysis to address the research questions and aims.

1.9 POPULATION

A population is that group, usually people, according to Heppner and Heppner (2004:110), from whom the researcher wants to draw conclusions. Welman and Kruger (1999:47) indicate that the term refers to study objects, which may be individuals, groups, organisations, human products, events or conditions to which they (population) are exposed. If it had been possible, the researcher would have liked to conduct his research on all polygraphists in South Africa (SA). This approach is, however, impractical, expensive and may take too long. For this reason, the researcher made use of a study population for this research, which is "that aggregation of elements from which the sample is actually selected" (Maxfield & Babbie, 1995:186).

The researcher, for practical reasons, used the polygraphists in Gauteng, who were scientifically selected and are members of both the South African Professional Polygraph Association (SAPPA) and the Polygraph Association of South Africa (PASA) as study population. The SAPPA and

PASA are two official and professional bodies that set standards about the polygraph profession in SA. These two professional bodies represent all polygraphists from different government departments and private practice in SA.

1.9.1 Sample

The researcher decided to select a sample of 23 participants from the 150 polygraphists with membership of the professional bodies SAPPA and PASA for the purpose of this research (this sample was classified as Sample A). Sample B consisted of two experts also from the 150 polygraphists belonging to the two professional bodies. The experts that made up Sample B (purposively sampled as defined in 1.9.3) were selected for the confirmation of information collected from both the available literature and from Sample A. According to Robson (1993:135), a sample is a smaller group selected from the population, while Blaikie (2003:161) describes the sample as a selection of a population which is used to make statements representing the population.

1.9.2 Sampling

In defining sampling, Bernstein (1998:73) writes:

> *"We all have to make decisions on the basis of limited data. One sip, even a sniff of wine determines whether the whole bottle is drinkable. A few drops of blood may be evidence patterns of DNA that will either convict or acquit an accused murderer. George Bush needed just a few bites of broccoli to decide that the stuff was not for him. The doctor cannot draw all your blood before deciding what medicine to prescribe or before checking out your DNA".*

Hagan (2005:133) defines sampling as the procedure used in research by which a sub-unit of the population is selected and studied in order to analyse the entire population. To select the sample the researcher obtained names of polygraphists registered with PASA and SAPPA in Gauteng. These names were put on a list and arranged alphabetically. To select 23 participants (Sample A) from the 150 polygraphists, the researcher utilised the probability systematic sampling method. In this type of sampling it is possible to confirm in advance that each part of the population will be represented in the sample (Leedy & Ormrod, 2005:211).

In systematic sampling the researcher knows the total number of people or objects in the population and makes a decision to select a specific number out of that total number (May, 1993:70). To determine the starting point of the sampling, the researcher wrote the numbers "1" to "6" (150 divided by 23 equals six) on separate pieces of paper and the pieces of paper were all thrown into a box. A number was then drawn, which happened to be the number "3". Number 3 was then used as a starting point on the list of 150 polygraphists. After the number 3, every sixth number or

participant was selected on the list of 150 to reach the total of 23 participants to be interviewed for the purpose of this research.

On the basis of the technique or sampling method utilised, the researcher was able to conclude that the 23 selected participants (Sample A) were individual polygraphists from the list of 150 polygraphists from the two professional bodies while Sample B (purposive sampled) was made up of experts also from the two professional bodies and from the total number of 150 polygraphists in SA.

1.9.3. Purposive sampling

This is the type of sampling where the researcher occasionally selects a sample on the basis of their own knowledge of the population, its elements, and the nature of their research aims. The researcher in this instance utilises their judgement and the purpose of the study. Such a sample is called a purposive sample (Maxfield & Babbie, 2000:238). Silverman (2000:104) supported the notion as quoted by Maxfield and Babbie (2000:238) that this kind of sampling allows the researcher to choose a case because it illustrates some features or process in which we are interested.

In the above sampling, people or other units are chosen, as the name implies, for a particular purpose. For instance, we might choose people who we have decided are “typical” of a group or those respect diverse perspectives on an issue. Purposive sampling may be very appropriate for certain research problems. However, the researcher should always provide a rationale explaining why he or she selected the particular sample of participants (Leedy & Ormrod, 2005:206) as per their résumé as highlighted below:

The researcher further utilised the knowledge of the two experts who were not part of the main group. These experts were drawn purposively. They also belonged to the two professional bodies (SAPPA and PASA). The résumé of the **first of the experts** is as follows (no names are mentioned for reasons of confidentiality):

- Currently a director and instructor of the American International Institute of Polygraph (AIIP) in Atlanta, Georgia and in the RSA
- The federally trained examiner with the Army Criminal Investigative Department (CID) in 1983
- Former instructor at Department of Defense (DOD) (American Department of Defense) Polygraph Institute
- Former director of Argenbright International Institute of Polygraph

- Current director on the American Polygraph Association (APA) Board of Directors on committees' responsibilities for sex offender trainings, standards of practice, community safety and quality control

The résumé of the **second expert** is as follows:

- A professional psychologist in the South African National Defence Force (SANDF)
- Lieutenant Colonel (SANDF)
- A polygraph examiner (SANDF and privately)
- Lecture in Psychology and Physiology (Polygraph School, AIIP, SA)

Permission from PASA and SAPPA to use the above-mentioned polygraphists in the current study was not necessary as they are not employees of these two bodies but professionals. The two experts were purposively sampled and they are therefore not representative of the population.

1.10 DATA COLLECTION

Data are manifestations of reality (Leedy & Ormrod, 2005:88). One gets two types of data: primary data and secondary data. Primary data are often the most valid, the most illuminating and the greatest truth-manifestation (Leedy & Ormrod, 2005:89). Primary data are generated by a researcher who is responsible for the design of the study and the collection, analysis and reporting of the data. These new data are used to answer specific research questions. Primary data are recognised by the fact that it is the outcome of direct contact between the research her and the source. (Blaikie, 2003:18). The second type of data is derived from primary data.

Silverman (2000:177) supports the utilisation of multiple methods (triangulation) of data to collect or gather information, as an attempt a "true fix" (analyse) on situation/s. Robson (1993:290) defines triangulation as a method of finding out where something is by getting a fix on it from two or more places. In the research context, when one collects data, the form of data-collection technique has to be identified and used. The use of multiple methods was motivated by the fact that there were research questions to corroborate and the use of the methodology triangulation was relevant, according to (Silverman, 2000:98), for ensuring validity and reliability (Mouton, 2001:10). The triangulation techniques utilised for collecting data during this research were the following:

- Literature
- Interviews
- Polygraph case-file records analysis
- Researcher's personal experience

1.10.1 Interviews

Yeschke (1997:173) defines interviewing as a process of gathering testimonial evidence; it has a predetermined objective, which is the discovery of the truth about the matter under investigation. It is also a specialised pattern of pre-planned interpersonal verbal and non-verbal communication between two or more people about a matter of mutual or common interests, according to the Technikon Pretoria Investigation of Crime II study guide (Technikon Pretoria, 2002:35). Interviews allow both parties (interviewer and interviewee) to explore the meaning of questions and answers involved; misunderstandings can also be checked immediately (Darlington & Scott, 2002:49). During the interview the interviewee is also asked to define and explain topics and this provides qualitative details, especially if little is known about the topic being studied (Hagan, 2005:173).

The researcher selected the semi-structured interview, referred to as "a set of questions worked out or prepared in advance," as a method of collecting data (Robson, 1993:231) to interview both samples. Following the methodology of the semi-structured interview the researcher is free to modify the pre-prepared questions based on his perception of what seems appropriate in the context of the conversation (Robson, 1993:231). The questions offer a versatile way of collecting data and the interviewer has room to probe the participants (Welman & Kruger, 1999:167).

In this study, data were collected through semi-structured interviews using the same questions, prepared in advance, to prove the aims and the research questions, as they were designed to reveal specific information, following Yeschke's (1997:138) guidelines. Both the samples, A and B, were asked the same set of questions and their responses were handwritten legibly by the researcher, with as much of the relevant substance as possible recorded and participants' own words used (Hagan, 2005:181-182).

Robson (1993:231) define the semi structured interview schedule as a set of preplanned questions prior the interview to ensure a structured discussion (Annexure A). The semi structured interview schedule prior to being used was sent to a workplace (State Security Agency or SSA) supervisor who was also a polygraph examiner, the language editor and the research academic supervisor for an assessment of language clarity and understandability, as advised by Welman and Kruger (1999:146). All of these assessors had no problem with the way the questions were formulated. The guidelines on interviewing as outlined by Leedy and Ormrod (2005:147-149), assisted during the pilot study. Welman and Kruger (1999:146) define pilot study as a process to detect flaws in measurement procedures and to identify unclear and ambiguously formulations. This was adhered to during data collection and was as specified/discussed in the sections specified below:

1.10.1.1 Plan the questions in advance

As explained above, the researcher made use of a semi-structured interview schedules to gather information on the questions used in a criminal investigative polygraph test. The researcher used pre-planned interview questions and also made use of probing (asking follow up questions to clarify the issue under discussion) during the interview to gather information and clarify issues of concern about the research questions. The main aim was to gather first-hand and honest information about the topic. As participants were polygraphists who were expected to understand the subject matter, questions were put to the participants and the researcher did not interfere with any of their responses.

The questions were open ended, which allowed the participants to express their thoughts freely. Royal and Schutt (1976:32-33) describe open-ended or extended answer questions as those questions that seek to give new information and give disclosure to any inquiry and they are not answered with “yes” or “no”. The questions were not sent out in advance but were discussed with the participant on the day of the interview.

1.10.1.2 Find a suitable location

According to the Technikon Pretoria study guide, Investigation of Crime II (Technikon Pretoria, 2002:45), an interview should take place at a venue away from people loitering, as that may disrupt the interview and relevant information may not be provided as expected. The researcher visited the workplace as arranged with the participants and a private office was requested where the interview could be conducted. Some participants were interviewed in a private restaurant or coffee shop where there was complete privacy and no disruption. The two experts were interviewed at their place of work, utilising a private office. This is where they conduct their daily work as private and independent polygraphists. In all the interviews there were conducted in complete privacy and with no disruption.

1.10.1.3 Obtain written permission

As a standing rule, permission has to be granted by the participants before any interview is held with them. Permission is particularly required if the participants belong to an organisation, in which case the organisation grants permission for the interview to be held. Participants in this research were 23 professional polygraphists and the two experts who were not employees of PASA and SAPPA. Owing to the fact that they were not employees of the two professional bodies, permission was not requested from these bodies.

Furthermore, all individual participants (23 participants and two experts) were willing to participate after the reasons for the research had been explained to them. Permission was requested from and

granted by both the SSA and the SANDF for their polygraphists to be interviewed (see Annexures C and D). A letter granting their consent to participate in the research was discussed and signed by all participants before they took part in the study (see Annexure B).

1.10.1.4 Establish and maintain rapport

The researcher explained to participants firstly about the purpose of the research as highlighted by Welman and Kruger (1999:197). To ensure that rapport was established, the researcher should also indicate the time it will take for the interview to be completed and should assure participants of their anonymity. Participants should also be informed that they are free to express their opinion. The above was therefore highlighted to participants during the research as indicated in the consent letter to participants (see Appendix B). It was further agreed with participants that the anonymity of all participants would be ensured and where need be pseudonyms or numbers would be allocated to participants, e.g. participant no. 1, 2, 3, etc.

1.10.1.5 Focus on the actual rather than on the abstract or hypothetical

A list of questions was pre-planned in the form of an interview schedule to cover the main topic, which was to direct the focus of the whole interview. Probing was undertaken where necessary to clarify other factual information of relevance to the research questions and aims, to allow participants to reflect more on the evaluation of the questions used in a polygraph test.

1.10.1.6 Avoid putting words into people's mouths

A good interviewer is a good listener and should not take the place of the interviewee, according to Technikon Pretoria Investigation of Crime II study guide (Technikon Pretoria, 2002:36). As a researcher, one should let the participant express him/herself in the best way he or she can, without being influenced. According to Brenner, Brown and Canter (1985:25), during probing no suggestions or implying to the participants about a particular answer is allowed; as such the researcher used open-ended questions. In addition, questions were put to participants and the researcher did not interfere with participants' responses in any way. The researcher is an investigator who understands interviewing processes because of work place training he has received and his interviewing skills were applied during this research to gather facts and relevant information successfully.

1.10.1.7 Record responses verbatim

Feedback or answers from participants with all relevant information related to the topic were legibly hand written by the researcher for later reference, and no tape recording was utilised. In addition no interpreter was used as there was no language barrier (Hagan, 2005:181). Where the

researcher was unclear, follow up questions were asked for clarity. Information as gathered was also read to participants to confirm what they provided.

1.10.1.8 Keep your reactions to yourself

The researcher should always keep calm and not show surprise in reaction to any of the responses by the participants during the research, according to the Technikon Pretoria Investigation of Crime II study guide (Technikon Pretoria, 2002:42). Questions should be asked, no matter how embarrassing they are. This was ensured by asking all the questions as outlined in the interview schedule to ensure that all the questions were answered as clearly as possible. The researcher also never provided information to the participants and they answered on the basis of what they knew and understood.

1.10.1.9 Treat responses as opinions rather than facts

As a researcher, one should always remember that the responses one gets from the participants are not necessarily facts but just their own perceptions, and they should be recorded and treated as such (Leedy & Ormrod, 2005:145-149). Probing was applied to ensure clarity on responses that were provided and all responses were written down for later analysis.

1.10.2. Literature study

The literature review, according to Mouton (2001:87), is carried out to ensure that there is no duplication of literature or information, concepts are defined, and data, empirical findings from other researchers and the measuring instruments that have been developed are examined. Accordingly books, journals, magazines, internet articles and dissertations in the Unisa libraries were reviewed. No literature was found that dealt specifically with formulation and types of polygraph test questions used in a criminal investigative polygraph test. Research on the polygraph generally “reflects a strong American flavor” (Martin, 2003:4). Literature on the polygraph, forensic investigation and criminal investigation was, however, found to be of value to this research.

As stated earlier, “polygraph” is still a misunderstood concept with the result that the questions used in a criminal investigative polygraph test reflect this uncertainty. The research was found to be valuable in gathering information on the evaluation of the questions used in a polygraph test to contribute to the field of polygraphs for better understanding by society, industry and academia. Gerber (1996:377) advises that the researcher should begin the research by reading general material that relates to his or her topic, and should review general documents which yield useful information, such as a thesis, conference proceedings, research reports, books, journal articles, white papers, and Acts. All these should have a bearing on the researcher’s research. For the

current study, the scope of investigation and an abstract or summary of a research article that indicated that the article was relevant were decisive factors in the choice of literature for review.

Lourens (2007:20) indicates that the criteria that should guide the researcher in selecting literature for review should be: relevancy of the source to the research problem; ability of the source to answer some of the problems or gaps in the researcher's knowledge; the fact that the source is better than others and the reasons for this; whether the source provides information the researcher already possesses or not; and the clarity of the arguments of the source. Mouton (2001:180) states that the factors that should guide the researcher are that the literature should be relevant to the information they are looking for and that it should be topical and not dated. In this study recently written books and studies were chosen over older studies as they were expected to contain new, updated information. Research was also not confined to internet studies as this does not always provide the researcher with reliable and up-to-date information.

Other factors to consider in selecting literature for review are that new viewpoints or themes should be there, and the source should cover the main aspect of study; the aim of the research and the research questions must guide the researcher to the relevant information; and the information should be well organised (Mouton, 2001:91). The interview schedule compiled by the researcher assisted in this research, as the schedule consisted of the research questions that had been broken down into a number of questions to gather information on the evaluation of the questions used in a polygraph test. Every source was acknowledged in the research at the end of the research in the form of a list of references. Sources utilised were also those relevant to the study.

Meijer (2006:8) advises that for the researcher to be able to gather information on a topic easily, the researcher should divide his topic into concepts. This research was therefore arranged according to the concepts like: "polygraph", "interviewing", "forensic investigation", "criminal investigation" and "questioning". A literature study was also undertaken in which books, documents, journals, magazines and the internet were reviewed and information gathered on the evaluation of the questions used in a polygraph test. Since the polygraph field is not often researched, especially in SA, the researcher had to go back in history to find relevant literature and information, to research the aims and the research questions successfully, hence the use in some instances of older texts.

1.10.3 Polygraph case file record analysis

Polygraph case file record analysis is about perusing or analysing existing cases or information to look at what might have contributed to the problem that is being investigated (Mouton, 2001:150). The researcher perused 150 polygraph case file record finalised by the SSA between 2007 and 2010 to gather information on the causes of the mostly inconclusive results (these are the polygraph

tests conducted for this period and they include all those of pre-employment, random screening and criminal specific tests). Out of the 150 polygraph case file records perused and evaluated, 13 were criminal investigative polygraph case file records, which were the focus of the analysis for the purpose of this research.

The 13 polygraph case file records were all analysed to gather information on the cause of inconclusive results, focusing on the in-test question formulation in each file. The researcher compiled a case-file analysis guide as a method of gathering reliable and valid information on the 13 indicated files. The case-file analysis guide consists of the following seven questions that related to the formulation and types of polygraph questions:

- Were there in-test phase questions on the file for the examination?
- Were the in-test phase questions clear?
- Were the in-test phase questions addressing the issue that was under investigation?
- Were the in-test phase questions accusatory?
- Were the in-test phase questions short?
- Were the in-test phase questions vague?
- Were the in-test phase questions focusing on a single issue?

1.10.4. Personal Experience

The researcher is a former police official (Captain) with 16 years of experience in the SAPS and has worked in the visible policing, criminal investigation and crime intelligence environments. As at the time of the research, the researcher had been a polygraph examiner for the past nine years, with an investigative background as a detective in the SAPS for six years, personal experience also assisted in evaluation of data during interviews on information collected from participants to distinguish fact from opinion.

It is also worth mentioning that in the past nine years that the researcher has spent as a polygraph examiner, the researcher has been able to conduct just over 2 000 polygraph tests, which included criminal-specific investigative tests, pre-employment and screening or vetting tests. As a detective in the SAPS, for six years, the researcher investigated just over 1 500 criminal cases, which ranged from not very serious to very serious cases. Most of the cases investigated by the researcher were those against members of the police laid by the public or where the complainants were members of the public.

1.11 DATA ANALYSIS

Grix (2010:48) defines analysis as interpretation, which is the stage where the researcher attempts to make sense of the data he has collected so that it all accounts (more or less have the same

meaning) for the data collected. As defined in 1.10, data are manifestations of reality (Leedy & Ormrod, 2010:88). One gets two types of data: primary data and secondary data. Primary data are often the most valid, the most illuminating and the greatest truth-manifestation (Leedy & Ormrod, 2010:89). Grix (2010:48) highlights two levels of analysis and a researcher has a choice of utilising either both or one level. The micro level of analysis involves individuals through interviews and the macro level concerns organisation, systems or structure. The researcher utilised the former (micro level) for the purpose of this research. Both samples (A and B) were interviewed in a semi-structured interview with an interview schedule to answer to the research questions. According to Leedy and Ormrod (2005:136), data analysis (namely the micro level of analysis where individuals are interviewed) has the steps outlined below.

1.11.1. Organisation of details about the case

This is the step in which facts are arranged according to categories. Information was gathered based on the topic, e.g. the information that related to the polygraph was put under the same heading and also analysed based on that category. The information collected from participants that related to the polygraph was structured in the same manner. No information was put where it did not belong. Information about questioning, investigation and criminal investigation was arranged according to the relevant topic.

1.11.2. Categorisation of data

Data collected should always give meaning to its "group". Data that relates to forensic investigation and/or the polygraph was categorised and arranged according to that group for it to make sense. Information that related to the polygraph, forensic investigation and criminal investigation was categorised thematically (arranged according to themes). No information was put where it did not belong.

1.11.3. Interpretation of single instances

Leedy and Ormrod (2005:136) encourage a balance of data in terms of interpretation for researchers when they are engaged in any research work. This at the end will lead to fair, complete, sensitive analysis and interpretation of data. The researcher endeavoured to analyse single instances of data based on the information collected from literature studies, interviews with participants and personal experience. It should be mentioned that even though the researcher was a polygraphist and an investigator himself, all information collected was treated as objectively and fairly as possible. Where the information collected did not support the topic or research question, that fact was highlighted accordingly.

1.11.4. Identification of patterns

Data were scrutinised for more information. Literature was consulted to gather more information in relation to each research question and response from participants to ensure that information they provided was relevant. Where not enough information was provided in any interview, probing was undertaken for clarity or for more information.

1.11.5. Synthesis and generalisations

This step involves drawing conclusions from cases studied. In the current study conclusions were detailed according to each research question using findings from the literature sources and responses from participants that addressed the evaluation of the questions used in a polygraph test. Rubin and Rubin (1995:226-227) state that data analysis can start while interviews are taking place. The information from the sample was arranged into smaller questions for more detailed information in response from the participants.

Information that was collected using the data-collection techniques, namely interviews, case-file analysis and a literature review, was categorised according to themes that related to one another and key words to make sense of what was relevant and discovered on the basis of the research questions. Data analysis was complete or was at its end product when all made sense and one was able to share the information collected with others, especially those who had to benefit when the research was completed, i.e. the institution, fellow researchers, polygraph examiners and the community.

Each participant (sample A and B) was asked the following first four (4) questions before each interview began:

- Are you a polygraph examiner?
- For how long have you been a polygraph examiner?
- Did you do the basic polygraph course?
- Are you currently conducting polygraph tests?

Feedback received from participants was that they were polygraph examiners with polygraph experience ranging from three (3) to (15) fifteen years. All (participants) had completed their basic polygraph course and were involved in conducting polygraph tests. This was a confirmation that whatever information that was gathered throughout the research, was gathered with the most appropriate sample, which could provide relevant information for the research.

1.12. VALIDITY

"Validity" refers to being able to measure what the researcher is supposed to measure (Welman & Kruger, 1999:138). It is also referred to as "truth" (Silverman, 2000:175). For validity of data to be achieved, the steps described below should be achieved, according to Silverman (2000:177-185):

1.12.1 The refutability principle

Researchers can only make objective conclusions regarding information when they have sufficient information. The researcher did all in his power to confirm every piece of information gathered regarding the topic to ensure validity, and this was information with relevance to the research aims and research questions. The researcher utilised triangulation, which is the utilisation of multiple approaches to gather information during the research, to gather as much information as possible (Welman & Kruger, 1999:192).

The data-collection methods used for triangulation were the conducting of semi-structured interviews, polygraph case-file records analysis with a guideline that was based on the research questions, and the literature study used to gather information on the evaluation of the questions used in a polygraph test. Even personal experience, as discussed under Section 1.10 "Data Collection," assisted during the research to confirm relevant information about the questions used in a criminal investigative polygraph test.

1.12.2 The constant comparative method

Jumping into any conclusion without sufficient facts should always be avoided by qualitative researchers. Every piece of information gathered should be tested (Silverman, 2000:180). This research was undertaken to ensure that information on the topic was relevant. This meant that all information that was collected through interviews was compared with that from literature and case-file analysis. Personal experience assisted to confirm whether the information collected could be considered to be factual or not based on the aims and research questions of the current study.

1.12.3 Comprehensive data treatment

The researcher interviewed all participants, conducted case-file analysis and a literature study to gather relevant information that related to the aims and research questions.

1.12.4 Using appropriate tabulations

The researcher should be able to tabulate and see that "it is problematic to count participants' questions when data are field notes" (Silverman, 2000:185). The above step is critical and needs to be followed by every researcher to achieve validity. The steps also guided the researcher in drafting

questions for the interviews. The participants were selected using systematic sampling. No sampling selection was carried out on the case files as all were utilised.

As there were no books that covered the topic directly, information was gathered based on the concepts behind the topic, which were: “polygraph”, “forensic investigation” and “criminal investigation”, to uncover information. Information was obtained from magazines, journals, training materials, other articles, and so forth. During the interview process, semi-structured interview questions drawn up as an interview schedule were prepared in advance and the same set of questions was asked of both samples addressing the research questions and aims. Probing was undertaken to clarify those issues that were unclear during the research to address the main topic.

The interview schedule was sent to a language editor to check for flaws as part of the pilot study. The pilot study was set up to detect flaws in measurement procedures and to identify unclear and ambiguously formulated items (Welman & Kruger, 1999:146). The interview schedule was also sent to a work place supervisor for language clarity and understandability as advised by Welman and Kruger (1999:146). The work place supervisor expressed no problem with how the questions were formulated. The interview schedule was also sent to the academic research supervisor on the subject to check for language accuracy and understandability. He also gave the go ahead, an indication that the questions on the schedule were clear.

1.13 RELIABILITY

According to Welman and Kruger (1999:143), reliability is the extent to which the scores obtained may be generalised to different occasions, measurements and forms. This is when the same instrument gives the same results in all different occasions and environments. To ensure reliability during the research, one has two options, i.e. using an existing instrument or creating one’s own (Mouton, 2001:100). The following were existing instruments utilised during this research: semi-structured interview schedules and literature sources, as advised by Mouton (2001:100).

The researcher utilised a semi-structured interview schedule (with pre-planned questions) to ensure reliability and answer the research questions at the same time. Mouton and Marais (1990:79) define reliability as a situation in which a valid measuring instrument was applied to different groups under different sets of circumstances and it led to the same observation or results. Reliability was influenced by the researcher, individuals or participants, measuring instruments (structured or unstructured interviews) or research context, i.e. circumstances under which research was conducted.

By conducting interviews, using an interview schedule for both Sample A and Sample B, asking the same set of organised and prepared questions but also with a list of topics and aspects to cover on the topic, reliability was ensured. A case-file guide was used to evaluate polygraph case file records. Semi-structured interviews on the both samples allowed the researcher to probe for unclear answers, in this way making it possible to gather more and clearer information on the topic.

Both samples were asked the same set of questions but no formulation was adapted in terms of terminology to fit their background and educational level, as they all understood the questions (Welman & Kruger, 1999:167). Mouton and Marais (1990:92, 79) suggest that anonymity and rapport establishment are important for ensuring reliability. Welman and Kruger (1999:167) and Mouton and Marais (1990:92, 79) are further of the view that reliability requirements are ensured when methods used by the researcher produce the same results even when employed by different researchers at different times.

Using the same interview schedule with both samples and making use of case-file guide ensured reliability by the way they were all implemented. The PASA and SAPPA were not asked for permission as both samples contained not employees but professionals. SSA and the SANDF however provided permission as some members of the samples were in their employ (see Annexures C & D attached).

1.14 ETHICALITY

Gilbert (1993:40) defines ethics as a practical normative study of the right and wrong of human conduct. Whether during research or investigation, ethical behaviours come into play when one interacts with people. In almost all disciplines, when research is conducted, human sources are utilised, and, for that, ethical issues come into play as mentioned. Walliman (2004:145) also believes that ethics involve moral principles and rules of conduct. The researcher conformed to UNISA Code of Ethical code including those ethical issues that need to be adhered to by all researchers, as explained above, fall into the categories listed below (Leedy & Ormrod, 2005:10).

1.14.1 Protection from harm

This is where the researcher explained the implications and the processes of the research to participants so that they make an informed decision. The purpose of the study was explained to the participants and they were given an opportunity to ask questions they might have had before they answered all questions about the research posed to them. The sample was assured that their involvement would not put their lives in any risk and that they would not be harmed in any way, e.g. harm to their reputation or privacy by revealing their names in the dissertation. Both the samples were therefore given an informative schedule, which they had to sign, that explained that

the research was in no way going to harm them and all concerns of the participants were addressed before the interview commenced. All participants participated without difficulty after they had read and signed a consent letter.

1.14.2 Informed consent

Participants are supposed to be informed of the particular study being conducted in detail and their voluntary participation obtained. The purpose of the research was explained to participants and they were given an opportunity to ask any questions they might have had before they answered all questions about the research posed to them. Before the interview began, a signed consent form was given to each participant detailing the information as had been explained to them orally. In this way, their informed consent was obtained prior to each interview (see Annexure B). The SSA and the SANDF provided permission as some of the sample members were in their employ (see Annexures C and D attached). The PASA and SAPPA were not asked for permission as participants were not employees of these organisations but were professionals.

1.14.3 Right to privacy

According to Mouton (2001:243), because of an increasingly public and transparent world, researchers have to be extremely watchful in respecting the participants' rights to privacy. For all the participants, pseudonyms were used, as advised by Leedy and Ormrod (2005:102). It was decided that none of the participants would be called by names. A number was allocated to each participant as 1, 2, 3, etc. A record was kept, however, of who each number represented. This was to ensure that the privacy of the participants was protected. All the interviews were also conducted either in an office or a place where there was absolutely no distraction or interference.

1.14.4 Honesty with professional colleagues

Information gathered should be presented as honestly as possible by researchers and not misrepresent what data was collected. No fabrication of information in whatever manner is allowed and all references should be given credit and acknowledged at the end of the thesis. Lourens (2007:94) advises that if something is not the researcher's own words/concepts/idea, it should be acknowledged. If credit is not given to the original author or credit is not given to whom it belongs, that constitutes plagiarism or documentary theft.

Walliman (2004:145) supports the notion that research does not always have to be original as even the greatest thinkers "have stood on the shoulders of giants" for their discoveries. Failure, though, to adhere to the above idea is unethical (Leedy & Ormrod, 2005:102). The researcher asserts that all ideas or information gathered from sources for this research project were acknowledged as indicated in some paragraphs and on the list of references.

1.15 RESEARCH STRUCTURE

To address the research questions and aims, each question is discussed in a separate chapter. Chapter 2 addresses the polygraph test: This chapter presents information gathered on what the polygraph test is all about, especially during a criminal investigation. Among others the Chapter also highlights more information on the purpose of polygraph testing, basic steps in conducting the polygraph test and polygraph admissibility in SA and other countries

Chapter 3 discusses the types of questions that can be used during a criminal investigative polygraph test. Furthermore it brings more information to the fore about those that can be accommodated or can be present during the polygraph test, the warnings that should be given to those taking the polygraph test, the effect of the SA Constitution, Act 108 of 1996 and the Bill of rights, Chapter 2 of the Constitution on the polygraph test and the guiding standards for questions formulation during a criminal investigative polygraph test.

Chapter 4 deals with the findings and recommendations related to each research question and aims to confirm that they (research questions and aims) were addressed. This chapter provides a conclusion on all that was learnt when the study was conducted and the way forward (recommendations) regarding question formulation and the types of questions to be asked in an in-test phase of a criminal investigative polygraph test.

CHAPTER 2
THE POLYGRAPH TEST

2.1 INTRODUCTION

Although the polygraph has always been controversial in the public eye and to those who have utilised it, its impact in every investigation has been tremendous (McManus, 2008:16). Swanson, Chamelin and Territo (1981:135) also agree that properly conducted or administered polygraph tests with well formulated test questions yield accurate results. Murphy and Pumphrey (1996:02) argue that the polygraph test must only be used to close gaps and not as a "quick fix" solution when an investigation has not been completed or properly conducted. Murphy and Pumphrey (1996:02) further highlights that a polygraph test is only a tool or an aid that assists during a criminal investigation.

Chapter 2 presents a discussion of the information that was gathered through interviews with Samples A and B because of their different involvement in polygraph and of information from the literature to answer the research questions and aims of the study. This chapter gathered information on what the polygraph test entails. The personal experience of the researcher also supported the information collected where it conformed to what was known.

2.2 THE POLYGRAPH INSTRUMENT AS AN INVESTIGATIVE AID

As the saying goes, "Greeting is African", this is also confirmed by the old school of thought that "First things first" (diary, 2012). Both sayings are relevant to the fact that one cannot talk of the polygraph as an investigative tool or aid without having described or defined what the polygraph instrument is all about. This chapter therefore begins by defining and describing the polygraph instrument as a way to provide a better understanding for the readers of this study.

2.2.1. Definition of the Polygraph instrument

Hollien (1990:274) defines the polygraph instrument as a standard instrument which captures certain physiological data or changes under relatively controlled conditions, while Tilstone (2006:18) defines it as an instrument that simultaneously makes recordings of the pulse rate, blood volume, breathing pattern and perspiration of the subject being tested. Myran and Garcia (1989:80) defines it as a machine that makes four recordings from a person when they answer specific questions, while Oxlade (1996:26) defines it as a machine (also known as a lie detector) that measures a person's pulse rate, blood pressure, breathing pattern and sweat when they are asked specific questions and states that any changes in those items being measured will be an indication of deception, a notion supported by Rheeder (2012:1).

In contrast to the above definitions, Matte (2000:7) regards the polygraph instrument not as a machine, but instead as a diagnostic tool that comprises, at most, ten per cent of the psychophysiological veracity examination process (polygraph examination). The veracity process, according to Matte (2000:7), combines the pre-test, in-test and the post-test interviews. The term *polygraph* is a Greek word with *poly* meaning many and *graph* for writings, which translate as "many writings" (Van Damme, 2001:04; Tilstone, 2006:203). Tilstone (2006:18) regards the polygraph instrument as a forensic tool that assists during the elimination process when an investigation (gathering of information) is conducted.

Hollien (1990:274), Matte (2000:7) and Tilstone (2006:18) are of the same view that the polygraph instrument monitors (diagnoses) physiological changes during the polygraph examination (psychophysiological veracity examination) when specific questions are asked. Although the authors have different emphases, most view the polygraph instrument as a tool that measures physiological changes when one is subjected to questioning during an examination conducted to monitor deception. From the literature consulted the polygraph was concluded to be a tool that measures physiological changes when a subject is asked a series of well-formulated and reviewed questions to monitor deception during the in-test phase of the tool.

2.2.2 Definition of the Polygraph test

In terms of the by-laws of the APA (2012), the Standard of Practice par. 3.2.3, polygraph test is a psychophysiological detection-of-deception interview with testing processes which include any occurrence between the examiner and the examinee during the pre-test, data collection, test-data analysis and providing of a professional opinion. Tilstone (2006:18) and Rheeder (2012:1) define the conducting of the polygraph test as subjecting one to the test by attaching components, a sequence of questions asked while deception is monitored triggered by the questions asked.

Matte (2000:89) differentiates between the test and examination for the purpose of the polygraph. According to Matte (2000:89), the *examination* includes all the phases (which are discussed in Section 2.7 of this chapter) in polygraph testing, namely: the pre-test, in-test (data collection) and post-test (analysis and interpretation) phases, while the *test* only consists of the in-test or data-collection phase. From experience and for the purpose of this research, the word "test" will be used to mean an examination, as it is mostly understood that way by researcher and from most literatures.

As indicated in Section 2.2.1 above, the polygraph is used as an investigative aid or tool to detect deception from those suspected to be involved and the test is that process. According to Royal and Schutt (1976:21-22) and Tilstone (2006:18), the polygraph test is a truth verification process during

an investigation and not a substitute for effective interrogation, interviewing or even investigation. The polygraph test assists in closing the gaps during an investigation (Norman, 1997:06 and Van Damme, 2001:12).

Clarke (2007:24) defines the polygraph test as a lie detector test and further highlights that, although this test or the instrument is able to provide very useful and powerful information, specifically during an investigation of crime, its challenges and barriers, because of the Frye court case rule in 1923, still haunt it. In this court case a "systolic-blood pressure deception test" was utilised at the time and this lacked scientific reliability, its evidence was never allowed and it was therefore inadmissible. McQuoid-Mason, Lotz, Coetzee, Jivan, Khoza and Cohen (2004:410) support the notion that the polygraph test makes use of a process of monitoring physiological changes associated with stress or nervousness due to questions asked. Kleiner (2002:viiii) more than Clarke (2007:24-25) argues that the polygraph test has a "special power beyond the ordinary human sphere" as it is capable of providing more information that is missing.

Russell and Coetzee (2000:3) associate the polygraph test with the flight or fright response. During this test the mind identifies the threat (what is under investigation) and the body undergoes stress where certain physiological changes occur. These changes may be obvious. Lying during polygraph testing is defined by Russell and Coetzee (2000:3) as a process to limit stress by avoiding the outcomes associated with the truth. These are the nuances a trained examiner observes and identifies. Although Matte (2000:89) regards the polygraph examination as a process and testing as a phase within the examination process during psychophysiological veracity examination both samples (Sample A and B) were in agreement with literature and defined the polygraph test as follows:

Sample A defined the polygraph test as follows:

- Ten participants indicated that it is a process where bodily changes are monitored when one is asked a series of questions
- Four indicated that it is a test where evidence is collected based on questions asked and physiological responses from that person are monitored
- Three defined polygraph testing as the truth-verifying process used when one is suspected of being involved into criminal activities, where a list of questions based on what took place are asked and bodily changes on the subject are monitored
- Six confirmed that it is a process that evaluated an individual in terms of the questions asked to determine if they tell the truth or not based on the physiological responses they produced

Sample B defined the polygraph test as follows:

- First expert described the polygraph test as a process where one gets subjected to the test voluntarily to monitor physiological changes when specific questions get asked regarding a matter under investigation
- Second expert described the polygraph test as a truth-verifying process when one gets asked specific questions to monitor any deceptive responses

The participants showed great understanding of what the polygraph test is, with no disagreements or contradictions. The definitions provided by the participants confirmed the one found in most of the literatures that the polygraph test is a truth-verifying process where one gets asked a series of questions with components attached to their body to monitor physiological changes.

2.3 THE PURPOSE OF THE POLYGRAPH TEST

Cilliers and Martin (2002:135) define the purpose of the polygraph test as being to determine truthfulness of those tested, while Kleiner (2002:viiii) states that the purpose of polygraph testing is to ensure that a successful investigation is achieved. This technique is used where other information is missing and to close gaps (Murphy & Pumphrey, 1996:2). According to Murphy and Pumphrey (1996:2), a polygraph cannot be administered during an incomplete investigation as the instrument is not a substitute for other investigative methods, such as interrogation and interviewing. This means that an investigation should have exhausted all its avenues before the polygraph test is considered (Murphy & Pumphrey, 1996:2).

Cilliers and Martin (2002:137) and Rheeder (2012:2) are of the view that polygraph tests are utilised by private companies for the following reasons:

- They promote the company's image, as integrity and honesty get maintained among fellow workers
- They deter dishonest employees from being employed, in this way protecting the company's profits
- Those loyal and honest to the organisation get protected from malicious and unnecessary accusations
- As the polygraph test is capable of identifying those involved, direct investigations can be instigated, in this way saving resources and time
- Risks are identified and dealt with evenly

Murphy and Pumphrey (1996:2) were concerned that, because of pressure for answers during an investigation, people shorten their investigation and utilise a polygraph as a "quick fix" solution. Horgan (1979:100), Murphy and Pumphrey (1996:2) and Kleiner (2002:viiii) describe the purpose

of the polygraph test as an investigative aid that assists in solving and preventing crime. It assists in presenting water tight cases in court by confirming the involvement of those suspected without a doubt, especially if a confession or some admissions are obtained through its use. Bennett and Hess (1991:184) also confirm that the purpose of the polygraph test is to develop leads, uncover new information and verify statements provided. The APA By-Laws (2012) par. 3.1 highlights the purpose of conducting a polygraph test as to determine one's truthfulness regarding the matter under investigation.

The samples confirmed the purpose of the polygraph test as follows:
Sample A:

- Ten indicated that its purpose is to verify the truth
- Two indicated that it is to confirm or refute suspicion, based on existing facts
- Five indicated that it is to verify information during an investigation
- Three indicated that it is to gather more information which an investigation has failed to gather, in this way helping to solve and prevent crime
- One said that it is to confirm what was alleged
- One indicated that it is to eliminate the innocent from the list of those who are suspected of being guilty
- One regarded the purpose of polygraph testing as being to detect deception, thereby identifying those involved in wrong doing or criminality

Sample B, both experts indicated the purpose of the polygraph test as to determine the truthfulness of an individual regarding a specific incident.

There is a general agreement between both samples and the information obtained from the literature that the purpose of the polygraph test is to gather information, determining the truth thereby helping to solve and prevent crime (deterrence). The literature consulted confirmed that the polygraph test is used to detect deception, in this way ensuring a successful investigation by identifying those involved. Cilliers and Martin (2002:137) and Rheeder (2012:2) also introduce the important perspective that polygraph tests are about saving time, resources and ensuring deterrence in criminal involvement.

2.4. BASIC STEPS IN CONDUCTING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

These steps are also referred to as phases which are to be concluded for a successful polygraph examination (Matte, 2000:87). Taylor (1984:220-221) and Matte (2000:89) identify basic steps or phases as pre-test, in-test/collection of data, post-test/analysis and data interpretation. According to

Matte (2000:87), for a complete polygraph examination to have taken place, these phases (pre-test, in-test and post-test) should have been completed. Russell and Coetzee (2000:72) confirm the above basic steps as indicated by Matte (2000:87).

Imwenkelried (1981:780), Abrams (1989:96), Gilbert (1993:117, 129) and Van Damme (2001:7-8) contest that a polygraph test has these basic steps or phases, which are data gathering, testing environment, pre-test, in-test and the post-test interview. Cilliers and Martin (2002:136) also list the basic steps as data collection, pre-test interview, actual administration of the test, scoring of responses and the post-test interview. Even though there is a general dispute on the basic steps that make up a polygraph test, the most utilised steps are the pre-test, in-test and post-test steps, as the other steps involve the administration part of polygraph testing, without which a normal test will not commence, and which are normal operational procedures before the polygraph test.

The basic steps as taught by the AIIP are the pre-test, in-test and the post-test. The APA By-Laws (2012) par. 3.8.1 to 3.8.6 also regarded the pre-test, in-test and post-test as the steps necessary for a polygraph test. The sample also differed, as did the literature, in identifying the basic steps used for conducting a polygraph test. Sample A responded as follows with regard to the basic steps in conducting a criminal investigative polygraph test:

- Six participants regarded the basic polygraph steps as data gathering, pre-test, testing environment, in-test and the post-test
- Seventeen identified the basic steps as the pre-test, in-test and post-test

Sample B regarded the basic steps as the pre-test, in-test and the post-test.

The basic steps in conducting a criminal investigative polygraph test therefore, as gathered from most participants (since all managed to name the steps even though six included the additional steps), literature and personal experience, are the pre-test, in-test and the post-test.

The different steps and their roles will now be discussed:

2.4.1 The pre-test phase

Taylor (1984:221) indicates the importance of the pre-test as being that it builds trust between the subject and the polygraphist. According to the APA By-Laws (2012) par. 3.8.1, this step is also known as the “data-collection” phase or step. This is the step where rapport is built with the subject, all inappropriate feelings are allayed; and in which procedure and background information is gathered. It is during this stage also that a subject is given an opportunity to explain their side of the event and that probing is conducted by asking follow-up questions to clarify other issues of

concern (Kleiner, 2002:2). Van Damme (2001:07), Reinach and Louw (2002:58), Davies, Hollien and Bull (2008:145) and Van Rooyen (2008:331) considered the pre-test to be the foundation of the polygraph test.

The following should be covered during the pre-test, as confirmed by Inbau, Moenssens and Vitullo (1972:158), Taylor (1984:210), Gilbert (1993:117), Van Damme (2001:7), Reinach and Louw (2002:58), Davies et al. (2008:145) and Van Rooyen (2008:331):

- The subject's rights and consent should be read to them and consent obtained
- The issue under investigation should be discussed and issues clarified as to what happened.
- Confirm and address subject's involvement on the matter under investigation
- Follow-up questions, including open-ended questions, are used to elicit information, e.g. "Tell me more…" or "What about… ?
- The type of technique is selected
- Questions are formulated based on what needs to be addressed
- Questions are reviewed, i.e. questions to be asked are discussed to ensure that the subject has understood them; the subject should address the issue under investigation, be clear, not vague and be able to answer with a "yes" or "no"

The APA By-Laws (2012) par. 3.8.1 confirm that during the pre-test, examiners must obtain full information regarding those they are testing that relates to and must include informing them promptly of their rights, obtaining consent, ascertaining that the subject understands the whole process, including the questions to be asked and the issue to be tested on.

2.4.2 The in-test phase

Matte (2000:87) refers to this phase as a "test phase" during polygraph examination where data is collected. According to Inbau et al. (1972:160), this is the phase where questions agreed upon during the pre-test are evaluated and asked. This is also the stage where those questions formulated following guidelines, during pre-test phase, will be asked and the subject will be expected to answer with a "yes" or "no".

The subject will have agreed in advance that they understand the questions, as they will be asked these questions during the test while the components (polygraph instruments) will be attached to their body. The requirements for relevant questions are that they should address the issue under investigation, that they should be clear, not vague, and that they should be answered with a "yes" or "no". The in-test is only limited to closed questions evaluated prior the test.

The questions are asked three times while data is collected and the evidence, referred to as "charts", gets evaluated to establish if there has been any deception (Inbau et al., 1972:160). There will be a break between the chart collections. Taylor (1984:201) adds that when a polygraph examination is conducted, "it is not to measure lying per se, but changes in the person's body reactions related to the stress associated with deception." Bennett and Hess (1991:249) and Yount (2007:184) agree that this phase makes a successful and valid polygraph test when correctly formulated questions, following guidelines, are asked and in the correct sequence. It is an important step during polygraph testing as deception or no deception gets monitored in this phase based on the questions asked (Yount, 2007:184).

According to Kleiner (2002:127), those questions to be used during the in-test phase of the polygraph are formulated based on the details of what took place at the crime scene. Using crime-related information those questions are then structured and of importance is also that they should be based on what the suspect denies or the information they claim not to have knowledge of. Taylor (1984:214-228) advises that, for a successful examination, question formulation should not be accusatory as that may produce a pattern that resembles deception; in addition, they should be clear so that those tested know what they answering to and not be emotion evoking, e.g., using words like "murder" or "rape". Taylor (1984:221) concludes that although investigators draw up a list of questions to ask during the polygraph examination, a final decision as to which questions to ask and how they will be phrased rests with the examiner.

2.4.3 Post-test phase

Gilbert (1993:126) calls this phase the interrogation phase, while the APA By-Laws (2012) par. 3.8.2 regard this phase as an evaluation and interpretation of the recorded data into categorical test decisions concerning the examinee's truthfulness or concealed knowledge. It is in this phase where responses are evaluated. A second opinion will also be received from another examiner viewing and scoring the charts (referred to as the "quality controller"). Results will then be given to the subject and if there are any responses that need clarity from their side, they will be awarded an opportunity to explain about those responses. Where possible, a confession is obtained, based on the confrontation and interrogation.

The majority of the sample members (since all managed to name the steps even though six included the additional steps) and most of literature viewed the basic steps as the pre-test, in-test and post-test. Matte (2000:87) regards the data gathering, pre-test, in-test, testing environment and the post-test steps as important, as they assist in a thorough preparation, create an intense polygraph test and influence positive results. The discovery regarding the additional steps was that they

influence positive results. This was evident even from the general discussion in the past with fellow examiners and personal experience that, it was (as a general opinion of all) indeed the case.

2.4.4 Data gathering

The above step is covered before the actual test commences with investigators and this further continues during the pre-test with the subject, according to the APA By-Laws (2012) par. 3.8.1 when the full information regarding the case is confirmed. If some information seem to lack or there are still unanswered questions, a follow-up meeting is held with investigators and the full information relevant to the case is provided. The expectations (what needs to be uncovered or confirmed) of the investigators are addressed by correctly formulating possible questions that need to be addressed during pre-test and in-test phases. The list of questions will be given by investigators to the examiner to be addressed during the pre-test. Murphy and Pumphrey (1996:2) warn that despite pressure to obtain answers during an investigation, investigators should not shorten their investigation and utilise a polygraph as a quick fix solution.

Taylor (1984:221) concludes that although investigators draw up a list of questions to ask during the polygraph examination, a final decision as to which questions to ask and how they will be phrased rests with the examiner. Murphy and Pumphrey (1996:4) further suggest that while polygraph examiners and investigators should and must work together, polygraphist must not succumb to pressure in any way, i.e. by doing things that are unethical. According to Inbau et al. (1972:169), the meeting between the examiner and investigator is about ensuring that the investigation is completed, to confirm or refute an alibi, and to gather more as much information about the suspect as possible.

2.4.5 Testing environment/venue

Van Damme (2001:7-8) regards the testing environment or the venue as an environment where the polygraph test is to be conducted. Before the polygraph test commences, this environment need to be carefully selected and prepared before the polygraph test. Its importance is therefore that it is a condition or a place without which the polygraph test cannot or will not be successful. It is therefore regarded as an important aspect or step within polygraph as the preparation and ensuring that the environment is conducive before the test and the arrangements makes it to be regarded as a step during polygraph testing.

According to Inbau et al. (1972:158), Horgan (1979:98), Taylor (1984:219-220), Abrams (1989:38, 46), Gilbert (1993:117, 129) and Van Damme (2001:7-8), the “testing environment” is where the test is to be conducted. These authors believe that the testing environment is of importance during

polygraph examination and that it is the responsibility of the examiner that the environment, before the test commences, is up to standard.

As indicated previously, this is the place or venue where polygraph testing is to take place, according to (Horgan, 1979:98). Taylor (1984:219-220), Abrams (1989:37-38, 46), Gilbert (1993:129) and Van Damme (2001:07) are all of the opinion that the venue where polygraph testing should be conducted must be in a quiet environment with no distraction. These authors also suggest that the venue and furniture should be welcoming. Gilbert (1993:129) adds the specification that the place where the interview is held must be at a private (away from noise or disruption) place, i.e. at a police station or the polygraph agency's premises, and not at the subject's place of residence (comfort zone) to send a message that the matter is of a serious nature.

A well prepared testing environment, according to the above quoted literature, (par. 2.4.5), is the one that subscribes to the following:

- Room is free from any interruptions, i.e. no movement of personnel from time to time
- No pictures displayed on the wall to distract examinee or subject
- Only the subject and examiner is accommodated in the testing room
- Those observing, i.e. legal advisers, etc., should be in another room with a one-way mirror and the process be video and audio recorded
- Subject should also be informed accordingly of all these arrangements
- Where there's a language barrier, only an interpreter should be accommodated in the testing room. The furniture in the testing environment should be comfortable and welcoming

Matte (2000:87), as indicated above, regards data gathering as the in-test phase, differing in this view with all other authors. The importance though besides the disagreements, is a properly conducted polygraph test following the standard procedure and utilising a recognised technique and the phases mentioned by the other authors make up a daily operation before each test, which is included in the above-mentioned phases. The APA By-Laws (2012) par. 3.6.1 also confirms that it is of importance to conduct a polygraph test in a place free from distractions.

2.5 CIRCUMSTANCES WHERE THE POLYGRAPH TEST CAN BE USED AS A TECHNIQUE/TOOL

Cilliers and Martin (2002:137) and Rheeder (2012:2) indicate that the polygraph is employed on three levels, which are: during pre-employment screening, routine or periodic screening, and specific criminal testing where those to be tested have access to what is under investigation. Norman (1997:6) and Van Damme (2001:12) also identify three levels of use but further add that in

all the above the polygraph is also utilised to close gaps in already collected information. Venter (2009:9) regards the polygraph test as a tool that assists in the elimination of those suspected of involvement. McManus (2008:10) also identifies these levels but also indicates that the polygraph is designed to clarify areas of concern during an investigation, a notion confirmed by Royal and Schutt (1976:21-22) and Kleiner (2002:x), who further states that the polygraph is intended to ensure a successful outcome when firm knowledge is missing by seeking the truth from those suspected to be involved in what is under investigation.

Norman (1997:6), Van Damme (2001:12), Cilliers and Martin (2002:137) and Rheeder (2012:2) confirmed the following to be the circumstances where a polygraph test could be utilised:

- To close gaps during an investigation
- To confirm if subject had access to what is under investigation
- To eliminate those suspected
- To refute or confirm involvement
- To clarify areas of concern
- To ensure a successful outcome
- To gather more information where firm knowledge is missing and
- To seek the truth

Sample A responded as follows when asked about the circumstances where a polygraph test can be used as a technique/tool:

- Eleven participants confirmed that it is used to determine the truthfulness of the subject/individual in routine testing, pre-employment or specific issue testing
- Four indicated that it is used when one wants to eliminate the innocent and identify the possible suspect
- One indicated that it should be utilised when all other avenues are exhausted and there are still unanswered questions
- Two indicated that it is used when certain information is missing
- Three indicated that it is used to confirm one's criminal involvement in an alleged act
- Two indicated that during pre-employment, it is also utilised as a tool

Sample B responded as follows when asked about the circumstances where a polygraph test can be used as a technique/tool:

- The first expert indicated that it is an investigative tool utilised or used to eliminate those innocent from those suspected of involvement

- The second expert said it can be used when certain information pertaining to the investigation is missing

The reviewed literature together with the samples indicated that during polygraph testing (whether it is for the purposes of pre-employment, random screening or criminal investigation), one seeks to understand the truth by asking questions and to verify information collected or as provided or to gather missing information. Royal and Schutt (1976:21-22), Kleiner (2002:x) and McManus (2008:10) all argue that the polygraph test is used to determine the truthfulness of an individual during an investigation and the researcher also supports this notion, based on personal experience. Royal and Schutt (1976:21-22), Norman (1997:6), Van Damme (2001:12), Cilliers and Martin (2002:137), Kleiner (2002: x), McManus (2008:10) and Rheeder (2012:2) support the notion that the circumstances when a polygraph can be used as a technique/tool are when it is necessary to:

- Verify the truth
- Refute or confirm involvement
- Clarify areas of concern
- Close gaps
- Gather more information when firm knowledge is missing and
- Eliminate those suspected

Based on the above gathered information, it can be deduced that the polygraph is an investigative tool that can be utilised to address issues as indicated above, a notion supported by literature, participants and experts in their different views. Personal experience by the researcher also confirms the information as collected.

2.6 EFFECTIVENESS OF THE POLYGRAPH TEST

While controversy and challenges still cloud the polygraph profession, it is still regarded as an effective and very accurate tool by many, although not infallible (Russell & Coetzee, 2000:73). Russell and Coetzee (2000:73) claim that preparation is the key to polygraph effectiveness while Rheeder (2012:1) argues that effectiveness is dependent on examiner competency and correctly formulated test questions. Examiners therefore need to go to great lengths to ensure that they prepare themselves for their subjects for a very successful test, which includes determining the subject's emotional state and any medical conditions before the test.

Imwinkelried (1981:765) and McManus (2008:16) regard the polygraph to be effective because it is able to detect deception and has been the best tool to date in truth verification or the detection of deception. According to Bennett and Hess (2007:184), the polygraph has provided investigators with confessions, brought good results and compared favourably with other evidence, such as fibre

analysis, ballistic comparisons and blood analysis. According to Imwinkelried (1981:760), Swanson et al. (1981:135), Bennett and Hess (2007:184) and McManus (2008:16), the polygraph has been used for almost over 80 years in both civil and criminal cases.

Taylor (1984:244) confirms that the polygraph is effective and accurate in the hands of a competent, experienced and impartial polygraph investigator, utilising the correct technique, while Van Damme (2001:5; 12) affirms its popularity in SA as its use has risen dramatically both in private sector and government. Statistically, it was uncovered that the polygraph is mostly utilised by the institutions and sectors like, banks, security industries, retail industries, pharmaceuticals, and government departments and agencies, including the SAPS, Defence, and Sate Security Agency. Polygraph enquiries, according to Pretorius (2006), indicate that more than 14 000 examinations were conducted since 1986 to satisfied clients. According to "polygraph enquiries" (Pretorius, 2006), polygraphs are dependent on the expertise of the examiner, the setting of well-formulated questions, the examiner's technique, the examinee's state of health and a well-working polygraph instrument.

According to the APA, the instrument is between 85% and 98% accurate, as confirmed by the results of the more than 250 studies conducted by the APA over the past 30 years (Kleiner, 2002:247-248). On 31 October 1999, the then President of the APA (D.A. Weinstien) also confirmed that the polygraph was the only powerful tool ever available in the area of credibility assessment (Kleiner, 2002:247-248). The United States Joint Commission also reported in 1994 to the Central Intelligence Agency Director that despite all controversy, and the need for appropriate standardisation, oversight and training to prevent abuse, the polygraph should be retained (Kleiner, 2002:232). Taylor (1984:215), Abrams (1989:96), Yount (2007:94) and Rheeder (2012:01), suggest that for the polygraph test to be effective and accurate, it should focus on a single issue, no surprise questions should be asked, sufficient data should have been gathered on the test issue, well-formulated test questions should be asked to address the relevant issue and the instrument should work well.

Sample A responded as follows with regard to the question on the polygraph test's effectiveness:

- Ten participants indicated that the polygraph test is effective when a single issue (focusing on one issue, e.g. theft only and not theft and maybe rape) is tested and the examiner is competent
- Five indicated that it is very effective when correctly formulated questions are asked using a standard technique
- Two said that when a thorough pre-test is conducted, the whole test (in-test) is effective

- Three indicated that when conducted on a healthy subject who is able to distinguish between right and wrong, the polygraph test is effective
- The last three indicated that the polygraph test is effective in the hands of a competent and experienced polygraph examiner

Sample B, both experts confirmed that the test should be effective when APA standards are followed, i.e. regarding technique and well-formulated questions focusing on a single issue scenario

All participants confirmed that for the polygraph to be accurate, issues like formulated test questions, addressing a single during the test, correct technique and examinee's emotional state were of vital importance. Personal experience by the researcher can also confirm that out of the 100 tests the researcher conducted, specifically criminal investigative polygraph tests for the period 2003 to 2010, 80% of those tests were positive (subjects that failed later confessed during the post-test). The following were identified as a contributed success on the polygraph tests that were effective:

- Polygraph test was conducted on a healthy subject
- using a standardised technique
- with correctly formulated test questions
- the polygraph test was administered by a competent and experienced examiner
- addressing a single issue
- Calibrated instrument

Taylor (1984:215), Abrams (1989:96), Kleiner (2002:232), Yount (2007:94) and Rheeder (2012:01) had the following to provide in relation to the polygraph's effectiveness:

- It is effective when the focus is on a single issue test
- It is accurate when correctly formulated questions are utilised
- The examiner's expertise plays a role
- Thorough preparation is a key to a successful polygraph testing
- Using the correct technique contributes to an effective polygraph test
- The examinee's emotional state when the test is conducted plays a role
- A well-calibrated polygraph instrument is necessary for the polygraph to be effective

The 13 criminal investigative polygraph case file records conducted between the period 2007 and 2010 perused by the researcher to gather information during case file analysis, to find out on the causes of the mostly inconclusive results, revealed that the polygraph test was only effective where the focus was directed at a single issue (see the last question on case file analysis, under 1.10.3).

From the 13 polygraph case file records perused which involved criminal investigative polygraph tests, only two were found to have focused on a single issue and these tests were effective. In these two polygraph case file records, it was also discovered that the questions were well formulated addressing a single issue, contributed to the polygraph test's effectiveness of the results.

2.7 TRAINING

The crucial part of the polygraph test is dependent upon the way the entire polygraph test is conducted by an examiner and here his level of training comes into play (Russell & Coetzee, 2000:72). According to Grubin and Madsen (2005:366), the APA, which regulates the polygraph profession in terms of training and ethical principles, experiences challenges as most trainings are still conducted by unaccredited polygraph schools. Grubin and Madsen (2005:361) further argue that although the polygraph, (according to the inventors of polygraph, Messrs Keeler and Reid) was developed as an interrogative tool, detecting deception was dependent upon the examiner utilising their expertise, experience, training and background.

According to Rheeder (2012:2), a polygraphist is regarded as an expert witness whose evidence is tested for reliability and whose level of training is also scrutinised, including his technique, the questions used and the outcome of the test. Continued refresher courses polish the skill that the polygraph examiner has, as does seeking of knowledge in the polygraph field through reading and conducting research. This view is supported by Grubin and Madsen (2005:366), who state that the polygraph test is as effective as any other evidential tool but only in the hands of a well trained and experienced individual (polygraph examiner), which ensures its accuracy remains above 95%.

Generally, according to Taylor (1984:208, 224) and Abrams (1989:210), a trained and competent polygraph examiner should meet the following criteria:

- Bachelor's degree with investigative background and good moral character or
- Bachelor's degree having majored in psychology and physiology or
- Bachelor's degree, investigative background and interrogation skills or
- Bachelor's degree, communication skills and strong investigative background

Although the APA is a polygraph controlling body, it has no power to sanction untrained or poor practising polygraph examiners besides simply to cancel their membership (Grubin & Madsen, 2005:366). Abrams (1989:210) is of the view that most polygraphists are not adequately trained; even those in the field of psychology are concerned with polygraph examiners' training, a reason the polygraph test is still inadmissible in court. This is the reason Imwinkelried (1981:765) believes that the polygraph can only provide valuable results in the hands of a trained physician or psychologist, a view Abrams (1989:210) disagrees with when he notes that, "although psychiatrists

or psychologists were properly trained in interviewing, they might have a problem in interrogation skills as they used to believe what the client tells them.

Abrams (1989:210) believes that a competent polygraph examiner should have prior training, with a minimum of a bachelor's degree and investigative background. Imwinkelried (1981:765) strongly believes that a psychological background would make a better polygraph examiner, a view not supported by Abrams (1989:765). Taylor (1984:208, 224) indicates that a competent polygraph examiner only needs an understanding of how to administer findings and the understanding that any individual is capable of manipulating emotions. For Taylor, that knowledge about physiology or psychology is immaterial.

Two polygraph training institutions' websites were visited and these are American institutions that operates in SA and are APA accredited, namely, The Academy for Scientific Investigative Training (Gordon, 2009a), Director Mr Nathan J Gordon, and the American International Institute of Polygraph (AIIP), Director Mr Chuck Slupski, (Slupski, 2009). These schools produce, according to the above's websites, between 20 and 40 examiners twice a year. The first courses usually start in March to May and the last course in September to November and the courses are ten-week-long for polygraphists or polygraph examiners. The Academy for Scientific Investigative Training is responsible for training polygraph examiners in private practice also in SA, while the AIIP is responsible for training examiners in government departments in America and around the world, including SA.

The AIIP School outlines the following as requirements for new polygraph examiners, according to Slupski (2009):

- At least an associated college or university degree or applicable level of education as required by the country or State of applicant
- Investigative background or level of education as determined by country
- Good moral character as documented by professional references
- Be at least 25 years of age unless state licensing law requires otherwise
- A sponsor who is funding the tuition or expenses

Although training, as highlighted above, is needed for a professional polygraph examiner to practise and to protect the image of the profession, Grubin and Madsen (2005:366) argue that the field is threatened by unlicensed individuals after training as anyone can simply buy the polygraph instrument, call themselves an examiner and test privately.

Sample A responded as follows with regard to the training that one should undergo to become a polygraph examiner:

- Eleven participants agreed that a University degree with investigative background will make a better trained polygraph examiner to defend the profession
- Five suggested that a degree in both psychology and physiology would make one a better trained polygraphist
- Two said that an investigative background with strong interrogation skills would make a better trained polygraphist
- One indicated that a matric with strong communication skills would make one a better trained polygraph examiner
- Four indicated that a qualified polygraph examiner should be one with a degree, specifically in human physiology, and an investigative background

Sample B, both experts confirmed that a University degree with a background in psychology and physiology coupled with a strong investigative background, which includes interrogation, would make one a better skilled polygraph examiner.

There was a clear division on the requirements for training of a polygraph examiner on the part of the participants as was with literature. Information gathered was there were no strict standards on the level that should be upheld for one to become a polygraph examiner. This was also evident on all polygraph school in SA based on their own set of requirements and standards. Both schools do not have stricter requirements in terms of entry level as the Director of the school has the last say or decision.

Based on personal experience, a competent polygraph examiner is one with a degree, specifically in psychology or investigation, with practical investigative background and good questioning skills (both interviewing and interrogation). The training as provided by both polygraph schools operating in SA can make the examiner a skilful and competent polygraph examiner according to the modules presented. On the basis of the statistics provided by the schools, Slupski (2009) and Gordon (2009a), between 20 and 40 examiners, subject to a pass requirement of 75% per student, graduate twice a year in the above–mentioned polygraph schools. Training is still a debatable subject between examiners, the APA and the schools. The most challenging issue is standardisation and control so that only trained examiners from APA-accredited schools practise under licensed regulations.

The general concerns, mostly from literature and those raised by the participants, with regard to training of polygraph examiners are summarised as follows:

- Although properly trained, many professionals still regard polygraph examiners as not adequately trained to be referred to as experts
- Legal battles (on training of polygraph examiners and admissibility requirements) are the reason the polygraph is still inadmissible in most courts in SA and around the globe
- Schools that provide training for polygraph are still divided regarding the entry level or entry requirements
- Literature consulted and the participants of the current study are also divided on the entry requirements
- No control by the polygraph bodies
- No regulations on the polygraph in different countries including SA

2.8 FACTORS THAT INFLUENCE THE OUTCOME OF THE POLYGRAPH TEST

The polygraph test's outcome can be influenced in many ways hence the importance of training comes into play as it helps guard and eliminates these influences. Russell and Coetzee (2000:73), Pretorius (2006) and Yount (2007:95) and McManus (2008:75), all mentioned the factors that may influence the outcome of the polygraph test as the following:

- Accepted testing procedure with a valid scoring technique
- Quality of an examiner
- Subject's emotional state before the test
- Medical conditions
- Composition of appropriate battery questions to the issue under investigation and
- Correct analysis of subject's physiological responses (charts)
- Countermeasures (These are deliberate attempts or efforts by the subject being tested, designed to mislead, with the intention of making the examiner believes they are telling the truth on the issue under investigation, (McManus, 2008:75))

The above aspects are also supported by Imwinkelried (1981:773), Taylor (1984:214-220), Abrams (1989:49) and Kleiner (2002:34-36), as they further added the following about factors that influence the outcome of the polygraph test:

- The subject's emotional state
- Conducting a simulation test
- Adding of control questions to evaluate the subject's capability to respond
- Well-formulated questions based on facts as to what is being investigated
- The instrument
- Conducting a detailed pre-test
- Expertise of an examiner

- Countermeasures and
- The subject's qualification background

Sample A responded as follows regarding the factors that influence the outcome of the polygraph test:

- Six participants indicated that a detailed pre-test can influence the outcome of the polygraph test
- Five indicated that the subject's physical and emotional state can be of influence the outcome of the test
- Seven indicated that the expertise of an examiner is of vital importance and may influence the polygraph test
- Four concluded that an accepted technique with well-formulated test questions is of importance in influencing the polygraph test
- The last one emphasised examiner expertise as the greatest influence on the polygraph test and further said that a trained examiner would understand processes and be able to guard against all influences before, during and after the polygraph test thereby ensuring successful outcome

Sample B, both experts indicated that a detailed pre-test coupled with examiner expertise and countermeasures may influence the outcome of the polygraph test.

It is clear from the above factors as indicated by the literature reviewed and the samples that a well-trained polygraph examiner will be able to guard against any influences towards the outcome of the polygraph test, in this way enhancing polygraph accuracy for a successful outcome. There was also agreement that standard procedures need to be followed to eliminate influences towards polygraph test's outcome. There was no contradiction between any of the information supplied by either of the sources and the personal experience by the researcher also supports the information as collected that a well-trained polygraph examiner will be able to influence the polygraph test outcome as s/he'll follow specified guidelines and guard against any other influences with no hindrances.

On the basis of the information gathered from the literature and the samples, the following are factors deemed to be of influence on the polygraph test's outcome:

- Examiner training
- Examinee's emotional state and medical condition
- Technique
- Questions formulation
- Testing environment

- Case facts
- Polygraph instrument
- Countermeasures

2.9 ADMISSIBILITY OF POLYGRAPH TEST EVIDENCE IN SA COURTS

Section 210 of the Criminal Procedure Act, 51 of 1977 evidence admissibility is only dependant if that evidence, fact, matter or thing that is relevant, material and can produce prove or disprove any point or fact in issue in a criminal proceedings (Hoffmann & Zeffertt, 1994:21). According to Hoffmann and Zeffertt (1994:22), facts are relevant if they relate to each other "according to common course of events" and connections that they may not be separated from each other. With the above said, the admissibility of polygraph test evidence is still a challenge in many courts throughout the world, including SA, even in the USA where the polygraph was invented. The scientific community is still sceptical about its relevance, accuracy and reliability (Faigman, Fienberg & Stern, 2003:41). The following discussion focuses on the admissibility of polygraph test evidence in countries, specifically SA, the USA and other countries.

2.9.1 Admissibility of polygraph test evidence in South Africa

According to Cilliers and Martin (2002:138), there is currently no law in SA that regulates the use of the polygraph testing as there is in the USA, which has the Employee Polygraph Protection Act of 1988 (EPPA), which protects employees by curbing polygraph use by private industry. Cilliers and Martin (2002:138) present the following reasons for the objection to or inadmissibility of polygraph test evidence in SA, especially in private business:

- It forces one to incriminate oneself as it forces one to bring up one's past in order to approach the test with an untroubled soul
- Information provided to the examiner in confidence is passed on to the employer as a paying client
- One values the loss of benefits over the test, thereby subjecting one to "tantamount choice"
- The polygraph penetrates one's inner domain of individual belief
- It interferes with one's sense of anatomy as the instrument senses one's physiological response to questions asked
- It is believed to invade one's privacy

In South Africa there is no specific legislation that regulates the polygraph test (Rheeder, 2012:1). The Bill of Rights under the Constitution (Section 12) makes it unconstitutional in SA to compel a person to take a polygraph test or a test using any scientific equipment without the examiner first having obtained his/her consent (Rheeder, 2009). Polygraph testing has been allowed in many cases in the Labour Courts (LC) and Council for Conciliation, Mediation and Arbitration (CCMA),

although the Health Professional Council of South Africa (HPCSA) regards the polygraph test as completely unreliable. The Board (HPCSA) does not accept its use as it does not consider it a valid test (Christianson, 1998:7).

According to Venter (2009:27, 28), a commissioner at the CCMA who is faced with a particular case where an employer wants to introduce certain evidence from an expert in the field of polygraph has no discretion to refuse the introduction of such evidence. The mere fact that a commissioner is not trained in polygraph testing or has no extensive experience in that field (polygraph) should not disqualify the evidence of polygraph test from being introduced, much as a judge who is not trained as a pilot cannot and will not disqualify the introduction of a pilot's evidence in an aviation dispute. For polygraph test evidence to be admissible in the CCMA in SA, according to Venter (2009:73-74), the following criteria should be met by an expert (polygraphist) witness:

- Proof of his/her qualification/training
- Membership of a professional body
- Ability to lead evidence as a polygraph expert
- Ability to introduce test results with a relevant computerised system and to present charts
- Proof of training acquired from an accredited school
- Proof that the polygraph instrument used was calibrated

The admissibility was further supported by Rheeder (2009), who highlights two important decisions taken in both the LC and CCMA. These decisions were taken in the cases of *Amalgamated Pharmaceuticals Ltd v Grobler NO and others, (2004) 13 LC 1.11.3* and *Sosibo and Others v TCM, (2001) 10 CCMA 2.5.2* respectively. In these cases it was decided by the Commissioner that a polygraph test result does not indicate lying per se but only a deception and questions are often broadly formulated to exclude that which is not intended or sought. He further highlighted that for polygraph test evidence to be admissible; it had to be supported by some corroborative evidence and could not solely on its own be considered as evidence. Rheeder (2012:02) also supported the statement that polygraph test evidence can only be used in support of other collected investigative evidence.

According to Rheeder (2009), for polygraph test evidence to be accepted in both the CCMA and LC cases cited above, the employer in each case should have complied with the following requirements:

- Written consent should have been obtained from the subject or employee
- Refusal to take the polygraph test does not in itself amount to guilt and therefore dismissal
- The employer and the polygraphist should have agreed on the test questions

- Consent should have been clearly explained to the employee
- The employee should have been granted an opportunity, if he/she needed anyone to be present during testing, to invite them, only if they did not disrupt the proceedings in anyway
- The employee should have had access to the alleged property (crime scene)
- The employer should have been able to define the loss suffered by the employer with regard to the alleged misconduct
- Test results should have been given to the subject who took the test or the person who requested the test to be conducted

The admissibility and reliability of the polygraph test at the CCMA or LC, according to Rheeder (2009), gets tested focusing on the following:

- How the test was conducted
- The technique used
- Qualification of the expert and
- Questions asked, among others

Venter's (2009:87) conclusion is that any commissioner at any forum constituted to try facts "who outright refuses to allow a trained polygraph expert to testify at arbitration commits a gross irregularity". The current position in SA with regard to polygraph admissibility, therefore, although not regulated as in the USA through the EPPA Act of 1988, appears to be (based on literature) that it is admissible only in the CCMA and LC. The polygraph examiner is also regarded as an expert witness in these forums (Rheeder, 2009; CCMA news online, 2009).

Sample A responded as follows with regard to the admissibility of polygraph test evidence in SA court:

- Eight participants indicated that it is only admissible based on the merit of the case at the CCMA and not alone, that it should be supported by investigative information and that all legal requirements should have been met
- Five participants noted that it should be admitted with some supporting evidence at labour disputes or at CCMA hearings
- Six indicated that it is admitted at CCMA hearings in SA
- Four indicated that it is not admitted in SA but that in the USA some states accepted it

Both experts (from Sample B) indicated that though it is admissible in some cases at the CCMA and LC in SA, it is still not admissible in SA legal courts. The viewpoint from both samples and the literature was that in SA, polygraph evidence is only admissible at CCMA and LC hearings but

with other supporting evidence (as it is a supportive tool). There was no contradiction between the viewpoints of any of the sources consulted.

2.9.2. Admissibility of polygraph test evidence in the USA and other countries

The following are the reasons polygraph test evidence is forbidden in some countries and courts, particularly in the USA (Gardener & Anderson, 2004:223):

- Test results are not completely reliable and trustworthy
- Some juries tend to rely heavily on its results
- The competency of polygraph examiner is not certain

The first attempt to submit the results of a lie detector test, according to Grubin and Madsen (2005:360), was with the James Frye case in 1923, where a 19-year-old James Frye was charged at the time with robbery and murder in the USA. In Taylor (1984:253), Abrams (1989:3) and Bennett and Hess (2007:184), Marston's (Psychologist and an Attorney) evidence was never allowed and was declared inadmissible with the reasons that it had not gained scientific acceptance within the scientific community. This was the position until in 1993 when the *Daubert v. Merrell Dow Pharmaceuticals* case was heard. Although it never dealt directly with polygraph, this case set a tone for judges on how to admit scientific evidence. Based on this case, the following should be looked at before admitting any scientific evidence (Dresser, 2010:7):

- Whether the technique was testable or tested
- Whether the technique was subjected to peer review or publication
- The error rate of the technique
- Any standards governing the technique
- Whether the technique was acceptable to the scientific community

According to Grubin and Madsen (2005:360), the above case gave judges powers to look at each case based on its merit. Judges were expected to be "gate-keepers" and evaluate scientific evidence to ensure its validity and reliability before admitting it as evidence. Besides the polarisation of scientific community, an issue raised by Bennett and Hess (2007:184), the Daubert case indicated some resurrection of the scientific field, and the polygraph test, according to Faigman, Fienberg and Stern (2003:41), gained strength from having survived vigorous testing as scientific hypothesis from the history of the systolic test to the modern computerised polygraph instrument. Imwinkeried (1981:801) stands by the following reasons for polygraph test inadmissibility:

- Lack of preparedness of examiners
- Lack of experience of polygraphists and of a professional standard
- Self-serving hearsay as the instrument cannot be interviewed
- No firm proof as to whether lying produces physiological changes that can be measured

- Questionable soundness of the theory and
- Undue influence upon the court

To ensure proper administration of justice, the Japanese courts have set up some requirements for polygraph evidence to be admitted in court. Those requirements include the following, according to Kleiner (2002:73):

- Having used a standard instrument. This is a standard polygraph instrument with normal operating components, which are pneumographs, for upper body movement (breathing), galvanic skin conductance for the activities of sweat glands and the cardio cuff for blood volume and pulse rate
- Having used an approved technique, i.e. the Control Question Technique (CQT), Guilty Knowledge Test (GKT) or Search Peak of Tension (SPOT), or the Relevant and Irrelevant test (R & I)

The Japanese further suggest that a competent and qualified examiner should have a college degree, should have experience and should have gone through a mentorship programme (Kleiner, 2002:73). As stated above, the Daubert case brought a shift to scientific or polygraph admissibility as the polygraph is also a scientific tool. Following this case, the responsibility was with judges to act as gatekeepers in ensuring justice by looking at each case based on its merit and admitting any scientific evidence if it was relevant and would assist in the trial of fact.

Besides the Daubert case, other courts in the USA still scrutinise polygraph evidence in different ways, according to Faigman et al. (2003:41). Some of those are:

- A *per se* rule excluding the polygraph. This has encouraged stipulation before the test is to be administered that the polygraph test result will be one of the pieces of evidence brought to trial. The *per se* exclusive rule ensures that a qualified examiner does the test and the test becomes more accurate
- In New Mexico, although polygraph evidence is admitted, the trial judge makes the decision about whether to admit it
- In Massachusetts polygraph evidence is admitted after the examiner has introduced a proficiency exam and reliability

The use of polygraph testing is still problematic, specifically with regard to its admissibility, as it forces judges to abandon their role (as triers of fact to determine guilt and not to rely heavily on the instrument) to assess credibility and guilt (Dresser, 2010:8). For the scientific community still to cast some sceptical looks on the relevance, accuracy, reliability and admissibility is justifiable, according to Faigman et al. (2003:46).

The literature and samples consulted in the current study seemed very clear that reliability of the instrument was of importance but considered the competency of the examiner as the most important factor for examiners to be regarded as expert witnesses. The USA Lawyer in the USA Congress in 1986 confirmed that “polygraph tests are useful tools and that when properly run in good hands, it is a good test” (Gardener & Anderson, 2004:223).

The discussion revealed the following challenges faced by the polygraph in other countries:

- Polygraph still had great room for error
- Training of polygraph examiners was not always adequate
- The soundness of the theory itself was questionable
- It had an undue influence on the courts

In other countries, like Japan, the following needs to be adhered to before polygraph evidence becomes admissible (Dresser, 2010:8):

- A standard polygraph instrument should have been used.
- Acceptable technique should have been used.
- The polygraph test should have been conducted by a competent and a qualified polygraph examiner with a college degree and experience and who has been taken through a mentorship programme.

In the USA and other countries, like New Mexico and also Japan, the following are the requirements for admissibility (Gardener & Anderson, 2004:223):

- The polygraph examiner should have an appropriate qualification
- Judges are regarded as gatekeepers, since the Daubert case, to ensure that justice is served
- It should be support other evidence
- Proficiency polygraph examination and reliability of polygraph test should be introduced prior to admitting polygraph test evidence
- Judges make a final call as to its admissibility

TABLE 1: SUMMARY: POLYGRAPH TEST ADMISSIBILITY

South Africa	**USA**	**Other countries**
No regulation of polygraph	EPPA Act of 1988	No regulation
Not Admissible in court	Some States admit it under stipulation	Admit it under stricter requirements
Only admissible in LC and CCMA with other supporting evidence	1993 Daubert case: Judges to look at each case according to its merit	Judges has a final say on whether to admit evidence or not
LC and CCMA will test admissibility and reliability based on how the test was conducted	Courts test scientific evidence for validity and reliability	Examiner introduces proficiency exam and reliability
LC and CCMA test examiner competency by confirming examiner training, qualifications, membership and proof that instrument was calibrated	Some States require examiner licence, qualification and membership	Qualification, training and technique are scrutinised

(Sources: Cilliers & Martin, 2002:138) and Gardener & Anderson, 2004:223))

2.10 RELIABILITY OF THE POLYGRAPH

Matte (2000:29) confirms that, although the polygraph is widely used, the scientific community is still divided about its reliability. “Reliability” is the term used to refer to consistency in the polygraph, an indication that the test conducted can be repeated whilst obtaining similar results (Abrams, 1989:190). Fifteen years ago (from 1989), when laboratory literature was reviewed, it was found that the reliability was 85%. According to Abrams (1989:191), reliability of the Control Question Technique (CQT) in the laboratory indicated a high reliability of 70%. Excluding inconclusive test results, reliability was in the range of 87%. This was expected to be greater if conducted in the field because of autonomic arousal in real life, which is greater in the field than in the laboratory.

Matte (2000:29) argues that the polygraph is 90% reliable most of the time, a notion that is also supported by the APA, which has found in most of its published research studies that the polygraph is 98% reliable (Bell & Grubin, 2010:52). According to Rovner (2007), polygraph expert from Los Angeles, California, a polygraph test is only reliable as the person who conducts it (meaning that emphasis is on examiner expertise or training). Grubin and Madsen (2005:367) confirm the reliability of polygraph when they note that there may be potential alternatives to the polygraph but none have outperformed it. Abrams (1989:xvii, xix) lists other associated tests that have been tried, such as hypnosis, truth serums and voice stress analysis, but asserts that these have had few positive outcomes. In his view only the polygraph has been able to stand the test of time. Although not infallible, for the past 90 years it has doubled in use and continued to be the most reliable tool ever in criminal investigations.

The National Academy of Sciences (NAS), USA in 1998, after its research in the same year, reached the conclusion that reliability and accuracy are by no means inherent in the apparatus, as “polygraph tests can discriminate lying from truth telling at rates well above chance, although well below perfection” (Matte, 2000:29). It has also been suggested by Bell and Grubin (2010:52) that future polygraph testing should involve brain scanning as it has been discovered that brain areas involved in lying can be monitored with functional magnetic resonance imaging (fMRI).

Based on APA publications and research conducted over the past 90 years, polygraph utilisation has increased and no other tool invented has outperformed it. Matte (2000:29), Grubin and Madsen (2005:367) and Bell and Grubin (2010:52) further confirmed the following that:

- The term “reliability” refers to consistency
- Reliability differs from field to laboratory. In 1989, according to Abrams (1989:199-200), the field laboratory was 87% when inconclusive results were excluded; whilst in the laboratory it was 85%

- The APA regards the polygraph to be 98% reliable
- Reliability is considered to be dependent on the proficiency of the examiner, (Matte, 2000:29)
- Polygraphs have been able to stand the test of time far more than other devices or instruments such as hypnosis or voice stress analysis
- The polygraph has continued to be reliable, especially in criminal investigative tests
- The polygraph is not infallible
- It is able to discriminate lying from truth telling way above chance although well below perfection

Matte (2000:29), Grubin and Madsen (2005:367) and Bell and Grubin (2010:52) confirm polygraph reliability to be consistent especially in criminal investigative tests. The case-file analysis information also confirmed that the polygraph is reliable only if it is correctly utilised following correct stated procedures, which include:

- Focusing on a single issue
- Asking well-formulated questions
- Being conducted by a competent examiner
- Using the correct technique and
- Making sure the instrument is well calibrated

2.11 THE OBJECTIVES OF USING THE POLYGRAPH TEST AS A TECHNIQUE

Blignaut (1998:7) and Martin (2001:136-137) confirm that the use of polygraph testing in the private sector and in government is increasing. They suggest that the primary objectives of the polygraph as employed in these sectors are aimed at ensuring that truthful, trusted and honest employees are employed and that these aims enhance the image of the company or government department. Its use in these sectors, according to Rheeder (2012:02), is aimed at, among others, screening employees (pre-employment) to ensure trusted individuals are employed, internal criminal investigations (criminal specific issue testing), acting as a deterrent in crime prevention, and random (from time to time without schedule) screening in the workplace.

Norman (1997:06), on the other hand, indicates that when one conducts a polygraph test, it is to close gaps in an investigation and this view is further confirmed by Van Damme (2001:127), who states that a polygraph test is an investigative tool which should not be used in isolation or on its own as it is not infallible, although accurate in confirming involvement and eliminating the innocent (Tilstone, 2006:204). Rheeder (2009) highlights that the polygraph is used to test deception or confirm involvement, but not guilt per se.

Sample A responded as follows regarding the objectives of using a polygraph test as a tool:

- Eight indicated that it was utilised to narrow down an investigation
- Five indicated that it was utilised to verify the truthfulness about what was committed.
- Six indicated that it was to confirm or refute involvement
- Four indicated that it was aimed at gathering and getting some answers during an investigation

Sample B confirmed the objective of using a polygraph test as a tool as to verify the truth and confirm involvement.

The responses by the participants support Norman (1997:06), Martin (2001:136-137), Van Damme's (2001:127) and Tilstone (2006:204) and their views that the objectives of the polygraph is to close gaps, confirm involvement, and identify and eliminate the innocent, thereby determining the truth. Most participants also regarded the objectives of polygraph testing as to narrow down an investigation regarding those involved. There was general agreement with no contradictions.

From consulting the literature, in particular Norman (1997:06), Martin (2001:136-137), Van Damme (2001:127) and Tilstone (2006:204), the objectives of polygraph testing were gathered to be the following:

- To narrow down or reduce the number, during an investigation, of those suspected to be involved
- For elimination purposes
- For identification purposes
- To close gaps

2.12 SUMMARY

The polygraph is capable of detecting deception way above chance during any criminal investigative test (Matte, 2000:29). Studies from different researchers as indicated in the list of references totally agree that, while the polygraph still poses its own challenges in terms of acceptance, it has proved way above chance that it is a valid and a reliable investigative tool and was not infallible. For a successful investigation, the polygraph as an investigative tool needs to be utilised by competent polygraph examiners, employing correct techniques with well-formulated questions to identify and link those involved for successful prosecution. The polygraph examiner is also an expert like any other and must be utilised from time to time in any investigation to succeed and for prosecutorial success.

Venter (2009:27, 28) confirms that polygraph examiners are experts like any other whose evidence needs to be admitted for successful prosecution and this view is further supported by Rheeder (2009). Most studies have also indicated the greatest of support for the polygraph, especially big companies (government departments, retailers, banks, etc.) that were losing billions because of theft and fraud and found that it served as a deterrent, increasing their gains on a monthly basis. Both samples confirmed, as users of the instrument, that it has high accuracy rate and has had a number of successes throughout their careers.

CHAPTER 3
TYPES OF QUESTIONS THAT CAN BE USED DURING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

3.1 INTRODUCTION

Questions form an integral part of any discussion, especially during an investigation, whether whilst interviewing, interrogating or conducting a polygraph test. Questions unlock a discussion and keep the statements of those involved relevant to the discussion or to the topic. There are, however, good and bad questions, which makes it important to always use well structured (good) questions to achieve or yield good results. Bad questions fail both the objectives and the purpose of any discussion or investigation.

To research the types of questions that play a role in any investigation (interviewing, interrogation or polygraph testing) and to answer the research question on the formulation of questions for a criminal investigative polygraph test, the researcher read through relevant literature, conducted interviews and relied on his personal experience to gather relevant information to answer the research question, and aims of this study. The chapter that follows discusses question formulation or the setting up of questions and the types of questions that can be used during a criminal investigative polygraph test.

3.2 DEFINITION OF A SUSPECT

According to Karagiozis and Sgaglio (2005:378), a suspect is a hypothetical or possible offender while Bekker, Geldenhuys, Joubert, Swanepoel, Terblanche and Van der Merwe (2007:112) define a suspect as one who is suspected of having committed an offence. Bennett and Hess (2007:162) have a similar view to the above authors as they define a suspect as one who is directly or indirectly linked to the crime in question by either being involved, or having planned or directed it covertly.

According to Joubert (2001:220), a suspect “is a person who is suspected of having been involved in the commission of an offence and who”, because of his suspected involvement, “has a reason to give a false account of events”.

Sample A responded as follows when asked what a suspect is:

- Four confirmed that a suspect is somebody who is thought of as being involved in a crime
- Five confirmed that it is someone who is suspected of having committed a wrongful act under investigation

- Seven indicated that it is someone who has been identified, because of allegations, to have committed a certain crime
- Five explained that it is someone who is under suspicion of having committed a crime
- Two indicated that it is a person who might have done what is under investigation

Sample B, both experts responded that it was someone for whom suspicion of what was under investigation, with all relevant information, was upon them. There was therefore no contradiction regarding the definition of a suspect from both the literature consulted and both samples. Through personal experience, and from the information as collected from the indicated sources, it can therefore be confirmed that a suspect is someone who might have committed a crime or unlawful act that is under investigation.

3.3 THOSE TO BE PRESENT DURING THE POLYGRAPH EXAMINATION

A successful polygraph test is only between the examiner and the examinee or subject, (Abrams, 1989:38). However, according to Horgan (1979:98), legal representation may accommodated in another room, if need be. Taylor (1984:219-220) is of the view that only the interpreter may be accommodated in the testing where there's a language barrier challenge. Gilbert (1993:129), Van Damme (2001:07) and Rheeder (2012:01) are of the opinion that those to be present during polygraph testing should be the subject and the examiner (examiner and examinee) and that any other person, such as a legal representative should be accommodated in the other room to view or observe the proceedings, where they may not interfere with testing proceedings in any way.

According to Taylor (1984:219-220), the interpreter can only be accommodated in a testing room for interpretation where there is a language barrier. Where equipment are available, the interview can be video/audio recorded and those who are tested (examinee or subject) informed accordingly, otherwise it will be a violation of their privacy, according to the Constitution of South Africa, Act 108 of 1996, section 14 (d) (South Africa, 1996).

Abrams (1989:38, 46) suggests that it is always advantageous to use rooms with one-way mirror and equipped with audio/video systems to view the process of polygraph testing and at the same time give privacy to the subject and prevent allegations of misconduct. Abrams (1989:38) further suggests that no one should be present during the polygraph examination apart from the subject and the examiner for a successful polygraph test to take place and where an interpreter or legal representative is necessary those should be the only persons accommodated to assist or observe.

Sample A, responded as follows regarding those to be present during a polygraph test:

- Six indicated that for a successful polygraph examination, the test should be between the examiner and the examinee
- Eleven indicated that if there is a language barrier and if legal representation is needed, those should be the only persons to be accommodated for the duration of the test which will otherwise be between the examiner and the examinee. No interference from these observers should be allowed in any way though
- Four indicated that the test should be between the examiner and the examinee; any other third person, and that includes legal representatives, etc., may be accommodated in an observing room with a one-way mirror
- Two indicated that an interpreter with a polygraph background should be the one accommodated

Sample B indicated that polygraph was successful when total privacy was upheld. Where there was a total need for legal representative, they may only be accommodated to view the proceedings in another room equipped with video and audio recordings.

There is disagreement on who should be present during the polygraph examination as highlighted above. The following disagreements were noted from Sample A:

- Six said that only the examiner and examinee should be in the testing room
- Fifteen said that the interpreter may be accommodated in the testing room if there was a language barrier, however, the legal representative must be accommodated in another room and view proceedings and it should be equipped with audio and video recordings
- Two said only interpreter must be accommodated and preference be given to the one with polygraph training

Sample B, the experts, were of the opinion that the interpreter may be accommodated in the testing room if there was a language barrier, however, the legal representative must be accommodated in another room and view proceedings and it should be equipped with audio and video recordings

3.3.1 Interpreters

Picken (1989:23-25) refers to interpreters as translators as they rephrase, reword, convert, transform, and turn from one language into another. They transfer the meaning of a unit of language from one language to another (Picken, 1989:12). Webb (2010a:7) defines an interpreter as “one who translates orally for parties conversing in different languages”. Some of their roles are as follows, according to Picken (1989:23-25):

- They informally act as translators for foreign visitors
- They have a responsibility, not only to themselves, employer or client, but to the “truth”

- They have the authority to mediate between parties
- They offer an insight into language as well as into another culture
- They are invincible only when communication is clear and leaves nothing to question

Interpreters play a vital role during polygraph tests, as they act as a bridge between the two separate worlds of languages. Their role, as explained above, levels the playing field so that the pre-test, in-test or post-test interview is clearly defined to the examinee and to the examiner so that going forward all parties understands each other. It should be noted that only interpreters are permitted during the whole polygraph examination or interview (as per the statements of the sample and literature) because of the language barrier. Other observers can be accommodated in a room adjacent to the testing room with a one-way mirror or the process may be video or audio recorded Abrams (1989:38, 46), Gilbert (1993:129) and Van Damme (2001:07).

3.4 THE EFFECT OF THE SA CONSTITUTION ON THE POLYGRAPH TEST

The Constitution of RSA, Act 108 of 1996, section 12 (2) (c) (the Constitution being the supreme law of the country) supports individual rights of all from any form of torture, which includes being subjected to any medical or scientific experiment without informed consent, a notion also supported by Bekker et al. (2007:408-409). Murphy and Pumphrey (1996:17) warn that those subjected to polygraph testing should be treated with dignity and respect and that any refusal to take the test should not be considered an admission of guilt. Section 23 of the SA Constitution also enforces fair labour practice. Van Damme (2001:07) also confirms that consent should be obtained before the subject is taken for polygraph testing and they should be informed promptly of their rights as contemplated by section 35(1) of the SA constitution. The APA By-Laws (2012) par. 4.1.1 specifies that examiners must at all times respect the rights and dignity of those they administer a polygraph test on.

According to the RSA Constitution, Act 108 of 1996, section 35 (1) (b) (i) and (ii) (2) (b) and (3) (j) and section 10 (Bill of Rights), a notion also supported by Bennett and Hess (2007:184), the following are the subject's rights which they must be informed of (only those detained, arrested or accused) before they are subjected to the polygraph test:

- Right to remain silent and the consequences of remaining silent
- Right not to incriminate oneself
- Right to have one's inherent dignity respected and protected
- Right to legal representation
- Right not to be coerced into taking the test against one's will or consent

The above SA Constitution enforces these rights even if the subject consented or volunteered to take the polygraph test.

In any investigation, suspects, are first to be approached for information by being questioned. This is to give them an opportunity to explain themselves of suspected involvement and to clear their name. However, before they are questioned, they should be informed of their Constitutional rights of remaining silent. According to Joubert (2001:220), suspects like any other person have Constitutional rights of remaining silence but they do not have rights not to be questioned of possible involvement.

Sample A, participants responded as follows regarding the effect of the Constitution on the polygraph test:

- Nine indicated that no one should be forced against their will to take the polygraph test as it should be voluntary and there will be no violation of the SA Constitution if consent is granted and those subjected were informed of their rights
- Eight noted that if person consented to the test after their rights were explained to him, there will be no violation of the Constitution
- Six indicated that if the subject does not consent to the test and if it is not properly explained, this is regarded as a violation of one's right according to the Constitution

Sample B, confirmed that prior consent and information about rights should be given before and during the test as failure to comply with this, is a violation of the rights of those subjected.

Section 25 and 35 of the SA Constitution enforces the rights to remain silent, as indicated above, and to be informed of the consequences thereof, on all those detained or accused of any wrongdoing (Van Wyk, Dugard, De Villiers & Davis, 1994:427-428) and (Joubert, 2001:246-247). The Criminal procedure Act (Act 51 of 1977) sec 219A clarifies on admissions or confessions, that they should be made voluntary and that voluntary should not be accompanied by promise, threats or influence to induce a person (Van Wyk et al., 1994:428). Any person therefore based on the interpretation above, subjected to any investigation including polygraph should be informed of their rights with no influence, even though they volunteered to continue with the exercise.

The following are rights which, according to Joubert (2001:246-247), need to be read to those suspected before they make any statement or confession as emphasised by the SA Constitution, Act 108 of 1996, section 12 (1) (d), (2) (c), section 25 (2) (c) and section 35 (1) (a-d):

- Not to be subjected to any scientific or medical experiment without their informed consent
- A right to remain silent and to be informed of the consequences thereof

- Not be compelled to make any confession or admission, which may be used as evidence against them
- Right to legal representation

Joubert (2001:246-247), Van Damme (2001:07), Bekker et al. (2007:408-409) and Venter (2009:49) also believe that informing those subjected to any investigation promptly of their rights cannot be a violation of the Constitution. Both samples together with the literature consulted are in agreement that if the polygraph test is taken voluntarily having informed those subjected of their rights, is adhering to the above quoted SA Constitution.

It was therefore clear based on the collected information that whether those subjected volunteer or not to the polygraph test or investigation, they should still be informed promptly of their rights, as failure will be a violation of the stated SA Constitution.

3.5 WARNINGS THAT SHOULD BE GIVEN TO A SUSPECT BEFORE UNDERTAKING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

No polygraph test that should be administered or taken without having warned those so subjected. Warning are also called rights and Joubert (2001:246-247) indicated that the SA Constitution, Act 108 of 1996, section 35 (1) enforces these rights of those accused, even those subjected to polygraph testing, to be observed and is supported by section 35 (3) (h), which indicates that one is presumed to be innocent until proven otherwise by a court of law. The presumption of innocence until proven guilty is also confirmed by Murphy and Pumphrey (1996:17). The following are the rights that need to be observed when engagement is made with suspects or those accused as contemplated by section 35 (1) and section 35 (3) (g) and (j) of the Constitution of South Africa, Act 108 of 1996, which summarily states that:

- Any person has a right to legal representation and to be informed promptly of this right
- Suspects have the right not to be compelled to make any confession
- Right to remain silent and the consequences thereof
- Section 12 (1) (d) and (2) (c) of the RSA Constitution dictates that no one may be tortured in any way and subjected to any scientific experiments without their informed consent

Gilbert (1993:129), Van Damme (2001:7) and Bekker et al. (2007:408-409) state that suspects or anyone subjected to polygraph testing should not be compelled to take the test and that all must be done willingly and voluntarily. According to Gilbert (1993:129), Van Damme (2001:7) and Bekker et al. (2007:408-409), warnings (as indicated by the Constitution) are also meant for those regarded as suspects before they take the polygraph examination, and consent should be obtained and their rights read to them before they are subjected to the polygraph examination.

Joubert (2001:246-247) points out the rights below, which need to be read to all suspected, detained or arrested. Joubert's (2001:246-247) view is supported by Inbau, Moenssens and Vitullo (1972:171), Gilbert (1993:129), Van Damme (2001:07) and Bekker et al. (2007:408-409), who confirm these rights to be:

- A right to legal representation
- A right to remain silent
- A right to be informed promptly of the consequences of remaining silent
- A right not to be compelled without informed consent to any medical or scientific instrument

Sample A regarded the standard appropriate warning before a polygraph test (see Table 2), as enforced by the SA Constitution, to be of importance in their response, and further highlighted that the failure to adhere to these warnings or rights may render the test a violation of the SA Constitution and therefore a violation of the rights of those undergoing the test.

In practice the following is the warning used with a consent form as expected by the APA Standards.

TABLE 2: STANDARD FORMAL WARNINGS BEFORE POLYGRAH TESTING

LEGAL RIGHTS	*CONSENT*
I,…… declare that: *I have been informed that:* • *I have the right not to undergo this polygraph test* • *I can terminate the test at anytime* • *I have a right to remain silent* • *Anything I say may be used as evidence in a court of law* • *I have the right to consult with a legal practitioner of my choice* • *I can apply to the Legal Aid Board to be provided with a legal practitioner by the State.* *Signed…….* *Date……..* *Place……..*	*I,……..declare that:* *I submit myself voluntarily to a polygraph examination.* • *No threats, force, coercion or promise (about immunity or reward) were used to get me agree to take this test.* • *I understood that certain censors must be put on my body during this test and I agree thereto.* • *I am aware and hereby give permission that the oral and written results of this examination may be made available to:* ……. ……. *Signed…….*

(APA Lectures)

The information was also supported by the Sample B members, who responded by concurring on the standard warning that gets read to all those to be subjected to polygraph testing as of importance and that non-adherence might render the whole test as a useless exercise and a violation of the rights of those tested. The collected information confirmed that there was a general agreement from the literature and both samples that warnings (rights) should be given to those suspected before they take a polygraph and that this procedure was followed with all subjected to these tests. This is a standard formal warning on the polygraph form used in SA, which each subject is informed or warned about before each polygraph test, and is also an APA standard rule. The following rights are spelled out on the polygraph form:

- That the test is voluntary
- That the subject can terminate the test at any time
- That the subject has the right to legal representation
- That the subject has the right to remain silent
- That whatever is discussed may be used in court against the subject

Participants failed to come up with the formal warning but only mentioned aspects that should be in the warning. They rightly indicated all the requirements of the warning but failed to give the warnings.

3.6 TYPES OF QUESTIONS THAT CAN BE USED/ASKED DURING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

Since a polygraph test involves a series of questions to detect deception, certain types of questions are asked during this process and each type of question has its role. These questions asked during the in-test phase of a polygraph test play an important role and the researcher will focus on the control question technique (CQT), which is the technique most used during criminal-specific testing, for the purpose of this research (Van Damme, 2001:7).

Taylor (1984:94) indicates the following types of questions that are used during polygraph testing and their role, which must be reviewed before each test:

- Relevant questions: this question addresses the issue under investigation (also mentioned by Van Damme, 2001:07), e.g. did you take that cell phone?
- Comparison or control questions: this is usually vague, general question and assists in getting the baseline response of the subject. It is compared with the relevant question, e.g. before this year, did you ever lie to get out of trouble?
- Irrelevant questions: these are question that have nothing to do with the test and are meant to relieve the anxiety and stress of the subject and to compare truthful responses, e.g. is your name Paul? (also mentioned by Van Damme, 2001:07)

- Symptomatic questions: these questions are meant to address an outside issue, e.g. Is there something you are afraid I'll ask you a question about, even though I told you I would not? (also mentioned by Gilbert, 1993:120)
- Overall truth questions: these questions are meant to ensure that the subject answers truthfully to all test questions, e.g. Regarding this test, do you intend to answer truthfully all the questions on this test? (also mentioned by Van Damme, 2001:07)
- Sacrifice relevant questions, these are questions meant to create trust between the subject and the examiner. To ensure to the subject that there are rules in the polygraph field that should not be broken, e.g. are you completely convinced that I'll only ask you the questions that we've reviewed? (also mentioned by Yount, 2007:94)

Van Damme (2001:7) advocates the use of the above types of questions and further advises that the reviewing of these questions during the pre-test phase is to ensure that they are well understood by the subject. Gilbert (1993:120) and Yount (2007:184) express the same views as Taylor (1984:94) and Van Damme (2001:7) on the types of questions that are used during polygraph testing. They further confirmed the view expressed by Yount (2007:94) that no surprise questions (questions that were not discussed/reviewed during pre-test phase) should be asked during an in-test phase but only those reviewed or discussed. Bennett and Hess (1991:249), Yount (2007:184) and McManus (2008:60) confirmed that a valid polygraph test consists of correctly formulated questions that address what is under investigation. The following is the discussion on the types of question:

3.6.1 Relevant questions

According to French and Van Houten (1987:64), Murphy and Pumphrey (1996:05), Bennett and Hess (2007:184) and Gordon (2009b:10) correctly formulated (structured) questions should be asked in the right sequence for the test to be valid. According to these authors, a question is relevant when it meets the following criteria:

- Direct to the point
- Not vague
- Not accusatory
- Worded to be answered with a "yes" or "no" to reduce inconclusive answers
- Clear for the subject to understand
- Should address direct involvement
- Formulated in most cases on what the subject denies to have happened
- Should not address two issues

Examples of relevant questions, according to Bennett and Hess (2007:184), may include the following:

- Did you shoot at Peter last night?
- Did you take the money left on the counter?
- Did you drive over the pedestrian with your vehicle last Saturday?

Abrams (1989:66, 98) also confirms that a valid polygraph test consists of correctly formulated relevant questions addressing the case facts (what is under investigation). A brief discussion with those to be tested, giving their side of events and reviewing the said questions with them, makes criminal polygraph testing successful. It also ensures that those questions are clearly understood.

3.6.2 Control questions

The control question is an assumed lie question and is always compared with the relevant question, according to Abrams (1989:58), a notion that is supported by Van Damme (2001:07), Bennett and Hess (2007:184) and Gordon (2009a:10). According to the above indicated authors, a control question should be formulated as follows:

- Be vague to cover almost all in the past
- Be reviewed the same way as the relevant questions
- Time bars (date when crime was committed, Abrams (1989:188)) should always be prior to the act of crime
- If strong relevant questions were used, the control questions must be likewise
- Be formulated in such a way that they are in the same area as the relevant questions, e.g. if the issue was theft, damage or lie controls should be used (Abrams, 1989:58)

The following control questions, according to Bennett and Hess (2007:184), clarify the above:

- Have you lied to get out of trouble?
- Have you ever lied to someone who really trusted you?
- Do you regard yourself as an honest person?

3.6.3 Other questions

These include questions, such as irrelevant, symptomatic, overall truth and sacrifice relevant questions. These are questions that mostly serve the purpose of addressing an outside issue that might bother the subject, to bring the subject's level of nervousness back to baseline or homeostasis and to make sure that the subject has answered all the questions as reviewed truthfully (Van Damme, 2001:07).

Participants from Sample A responded as follows regarding the types of questions used during a criminal investigative polygraph test:

- Five indicated the relevant, control, irrelevant, symptomatic and overall truth questions can be asked during the in-test phase, with relevant questions focusing on the case facts
- Eight indicated that the relevant, control, irrelevant, symptomatic and overall truth questions asked during the in-test phase or data-collection phase
- Three indicated that only questions that relate to the criminal act can be asked during the test
- Four indicated that only questions that address direct involvement can be asked during the test
- Three indicated that only questions investigators want answers on can be asked during the test

Sample B, indicated that relevant, control, irrelevant and other questions are questions that need to be formulated with the subject.

There was a contradiction especially from sample A, as ten (10) participants answered more about choice of questions than the types as contemplated by the question. Participants thirteen (13) from sample A however managed to identify the types of questions together with sample B with no contradictions.

3.7 CHOICE OF QUESTIONS DURING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

Examiner should know the types of questions before the questions for the test are chosen. The questions are also chosen based on what needs to be addressed in an investigation, taking into consideration also the conditions (emotional and/or mental) of the subject (French & Van Houten, 1987:65). The primary utilisation of the polygraph, according to Murphy and Pumphrey (1996:04), is to aid and resolve conflicting information and to determine truthfulness when credibility is called into question. During this process, Russell and Coetzee (2000:70) explain that "the subject uses words and language when recalling an incident or event." The above makes the choice of questions to ask the subject to "recall incidents" correctly, an important factor during the criminal investigative polygraph test.

French and Van Houten (1987:65) advise that when questions are **chosen**, they should address a single issue, as the more issues are to be addressed, during the in-test, the lower the accuracy, e.g. address murder and not murder and rape. Conducting a test without full information about the case facts is also problematic (Murphy & Pumphrey, 1996:04). According to French and Van Houten (1987:65, 66), proper training of polygraph examiners, specifically on choice of questions and formulation, as prescribed by the APA standards, APA By-Laws (2012) par. 4.10.1, (will be

discussed in 3.8 below) is encouraged: as a lack thereof affects polygraph accuracy and leads to inconclusive results.

Abrams (1989:55-56), Duncan (2010:4-5) and Webb (2010b:7-8 & 18) advise as follows on the **choice** of questions, specifically relevant questions, for a relevant criminal investigative polygraph test:

- They should address the matter under investigation: if the crime was theft, questions should be about theft or stealing, e.g. did you take the R10 000.00 reported stolen at the teller yesterday?
- They should target the most serious offence. When theft was committed but one was killed during the theft, questions should focus on the murder rather than on the theft, e.g. did you kill John in his house last night?
- They should be narrow in scope, e.g. did you kill John in his house last night?
- They should address a single issue. In the above scenario they should target the murder and not also deal with theft
- They should use simple and understandable language, e.g. did you kill John in his house last night and not: did you murder John....?
- They should be unambiguous so as not to confuse situations
- Questions should not be vague, e.g. regarding the murder committed last night, were you the one who killed John in his house?
- They should not be accusatory, e.g. why did you murder John and steal his goods last night?

In all 13 files analysed, the following observations were made:

- Polygraph in test questions were found on file
- Were found to be vague
- Some of the questions were very short
- Address multiple issues

Both samples (sample A and B) responded that questions are chosen during a criminal investigative polygraph test, to address what is under investigation. Van Rooyen (2004:200) highlights the role and requirements of questions in general, during an investigation, as the following:

- They address concerns and examine expectations
- They assist in getting further information
- They assist with clarity on what was said or perceived
- They assist in reminding witnesses of a particular matter under investigation

- They resolve any misunderstandings regarding what might have been said previously

Abrams (1989:55-56), Duncan (2010:4-5) and Webb (2010b:7-8 & 18) highlight the requirements for good questions during the polygraph, especially relevant questions, as the following:

- Direct involvement
- Address a single issue
- No legal jargon and
- Be clear

When the 13 polygraph case file records were analysed, the following differences were observed:

- Questions did not address what was to be investigated
- Mostly questions were very unclear
- Some were even very accusatory
- Focus on multi issues

There was therefore a general agreement on the **choice** of questions as gathered from the literature and there was no conflict between the views expressed in the literature and the responses of the both participants. Though the participants rightfully indicated how questions should be chosen, the case file analysis indicated a serious challenge. The following information can be deduced from the challenges that:

- Insufficient training on questions formulation
- Poor targeting of the relevant issue

3.8 DEVELOPING QUESTIONS FOR USE DURING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

Question development or formulation is a challenge to many examiners as indicated in the problem statement (1.2). Royal and Schutt (1976:31) defines a question as that which is asked and the act of asking. Questions are meant to give clarity in any investigation and the way they get formulated or developed may lead to success or failure of the investigation. As Webb (2010b:7-8 & 18) advises, questions in a criminal investigative polygraph are meant for the in-test, as this is the stage that determines whether deception will be indicated or not. Well-developed questions therefore give an answer to an awaited outcome (Webb, 2010b:8 & 18).

Questions get developed immediately after a case scenario is presented by investigators. They may also provide a list of possible questions to ask during the pre-test phase; however, as Van Damme (2001:07) puts it, “those may not be the questions relevant to ask during the in test” and those questions get determined and developed by a trained and competent polygraph examiner.

When developing questions for the in-test, the APA By-Laws (2012) par. 4.10.1 gives further guidelines as follows:

- Questions should focus on what is being investigated
- Questions should be based on what the subject denies
- They may not be vague
- They may not be accusatory
- They should focus on a single issue
- They must be simple and direct
- No legal jargon is to be used
- No questions should include enquiries about affiliation, religion, politics or race unless the investigation suggests otherwise or there is relevancy to any of these factors in the investigation

Sample A responded as follows with regard to the development of questions for use during a criminal investigative polygraph test:

- Eleven confirmed that the questions should be developed to address what is under investigation
- Seven indicated that they should not be accusatory
- Two indicated that questions must be clear and to the point when developed
- Three indicated that they should be formulated focussing on a single issue

Sample B indicated that:

- The first expert said the formulated questions should address what is under investigation
- The second expert said formulated questions should not be accusatory

Based on the feedback as indicated above, the responses of both participants generally supported the ideas as gathered from the literature including APA Standards or guidelines, with no conflicting information.

3.9 PROBLEMS EXPERIENCED IN DEVELOPING QUESTIONS FOR USE DURING A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

Webb (2010b:6) regards problems experienced when questions are formulated as common mistakes that examiners need to recover from, and quotes the famous law of Murphy that, "mistakes are not always what get us into trouble but failure to recover from mistakes." He then highlights the common mistakes or problems experienced during question formulations for an investigative polygraph test as follows:

- Failure to gather case knowledge

- Lack of preparation
- Poor targeting of relevant issue
- Unclear format and selection of inappropriate questions
- Moving too fast or too slow with the polygraph testing
- Incompetency of examiner
- Addressing too many issues at a time

The above issues are also mentioned by Taylor (1984:221), Murphy and Pumphrey (1996:04), Norman (1997:06), Van Damme (2001:07), Kleiner (2002:x) and McManus (2008:66) who added the following to the challenge:

- Rushing to use the polygraph to ensure a successful outcome when firm knowledge is missing or uncertain
- Failure to use the polygraph to close gaps but as a substitute
- Failure of investigators and polygraph examiners to work together or cooperate, thereby succumbing to pressure from employers or clients and failing to uphold professional ethics by an examiner when pressure is applied

Investigators generally fail to give the expert (polygraph examiners) to play their role. Cultural issues also impact on question formulation. McManus (2008:79) defines culture as "a set of learned beliefs, values and behaviours the way of life shared by the members of society". Understanding someone to meet for the test, give the investigator even a better approach with fewer chances to offend during the interrogation or interview. An example given by McManus (2008:82) is about Latin American who greets by shaking hands and a little talk of family. He further indicated that anything less than that in your approach may be an insult to those who firmly believes in this, thereby offending them which may lead failure in establishing a good rapport.

The participants responded as follows about problems experienced when developing questions for use during an investigative polygraph test:

- Six indicated that not having the full facts of a case is problematic to question formulation
- Eight indicated that poorly trained examiners fail to grasp the essence of what needs to be addressed during a particular requested investigation
- Four indicated that if cultural issues (guarding against bodily behaviours as they may be misleading) are not considered during preparation, which might yield inaccurate results
- Five were concerned with the issue of influence that crops up from time to time where clients want an examiner to conduct the polygraph test in accordance with what they want to achieve

- The last two experts both regarded problems experienced as being not having full information on what to test on (therefore cannot formulate questions for the success of the test), influence from clients and examiner training

The following were consistent problems that Taylor (1984:221), Murphy and Pumphrey (1996:04), Norman (1997:06), Van Damme (2001:07), Kleiner (2002:x) and McManus (2008:66) discovered about question formulation:

- Poor training of examiners
- Incomplete investigation
- Using polygraph as a substitute of other forms of investigation
- No full case facts
- Wanting to address a lot of issues in a single test because of pressure
- No correctly formulated questions
- Failure by an examiner to uphold professional ethics, thereby succumbing to pressure and
- Cultural impact

Based on the above gathered information from all the sources consulted, there was a general agreement on the problems experienced during questions formulation as mentioned above. It was further gathered that the problems experienced were mostly the same with fellow examiners even abroad as indicated by (McManus, 2008:82).

3.10 SUGGESTED TRAINING OR SOLUTION TO RESOLVE THE PROBLEMS EXPERIENCED DURING QUESTIONS FORMULATION

According to Inbau et al. (1972:168-169), French and Van Houten (1987:66), Yount (2007:95), McManus (2008:66), the following are suggested solutions to problems experienced in question formulation during the criminal investigative polygraph test:

- Questions should always be formulated to address what is under investigation
- Questions should address one issue at a time
- Examiners should be properly trained
- Examiners should receive continued yearly training, mentoring and refresher courses
- Cultural dynamics or impacts should be considered
- Obtaining full case facts before the test
- Not rushing to please clients

The APA By-Laws (2012) par. 4.10.1 stipulates the following as other possible solutions to resolve problems experienced in question formulation:

- Use standardised techniques with standard instruments. The instruments should have standard components, which are pneumographs, cardio cuff and galvanic skin conductance
- Use well-formulated questions, e.g. questions that are not vague, not confusing, and are short and straight to the point, as discussed under the guidelines on question formulation (in Section 3.7)
- Do not rush to conduct polygraph examinations immediately on the subject without analysing the emotional state of the subject
- Understand that the polygraph instrument is only a tool to assist during an investigation and cannot be a substitute of other forms of investigation. It only closes the gaps which the investigation has failed to cover
- Utilising properly trained and experienced polygraph examiners
- Attending yearly workshops as a form of continued education
- Strict mentorship
- Being professional and not becoming a "yes" man. Give guidance where necessary as an expert in the field, such as informing clients that the polygraph can only address one issue at a time
- Do not succumb to pressure or influence from a client, investigator or employer

Sample A responded as follows with regard to solutions that resolve problems experienced during question formulation:

- Ten suggested that polygraph examiners should obtain full case facts before the test to curb poor targeting
- Six suggested that proper training of examiners can resolve the problem
- Five indicated that it is important to consider the cultural background of each subject before the test is conducted
- Two indicated that polygraph examiners need to be conversant with the APA standards to ensure professionalism at all times

Both experts regarded training as a solution to problems experienced during questions formulation. Participants therefore confirmed suggested solutions with no contradictions.

3.11 GUIDING STANDARDS FOR FORMULATING QUESTIONS FOR A CRIMINAL INVESTIGATIVE POLYGRAPH TEST

Van Rooyen (2004:200) relates the sole purpose of questions as being to unearth missing information. Even in criminal polygraph testing, well-formulated questions help achieve the purpose with no difficulties (Bennett & Hess, 2007:184). Webb (2010b:6) advises on the

following with regard to question formulation for the successful criminal investigative polygraph test:

- Investigators should have gathered full case knowledge to assist in question formulation
- Investigators should be prepared to give a polygraphist an upper hand in handling the test
- A brief discussion with investigators before the test gives the polygraph examiner a better picture of what is coming or what to address
- No full case facts mean poor targeting of the relevant issue
- Unclear format and selection of inappropriate questions
- Moving too fast or too slow with the polygraph testing
- Not to utilise Incompetent and inexperienced examiners
- Do not attempt to address too many issues at a time

The APA By-Laws (2012) par 4.10.1 also confirms that:

- Questions should be clear and distinctive when formulated
- Questions should address what is under investigation
- No legal jargon should be used
- No questions are to be asked that inquire about one's affiliation, belief and politics or race unless it is relevant to the investigation

Gordon (2009b:8) advises on the following general rules for formulating test questions:

- Questions must be worded so that a response is a "yes" or "no"
- They must not involve legal terminology (i.e. rape, robbery, murder, etc.)
- Each question must be clear and unmistakable
- Questions must not be accusatory
- Questions must not contain an inference
- Questions must refer to one offence
- Questions must address one element of crime

Sample A responded as follows regarding the guiding standards for formulating of questions during polygraph testing:

- Five indicated that a question as requested by investigators can be addressed during the pre-test when the subject gets given an opportunity to explain themselves, but the questions should focus on the case facts
- Twelve indicated that the test should address what needs to be unearthed
- Three indicated that only questions that relate to the criminal act can be asked during the test

- Three indicated that only questions investigators want answers on can be asked during the test

Sample B, both experts indicated that only questions that address direct involvement can be asked during the test.

The participants therefore agreed that questions should address the case facts. There was also a general agreement both from the literature and both samples on the guiding standards of question formulation for use during polygraph testing, that those questions should address direct involvement. Question formulation information came more from literature as to how questions need to be structured, although some sample members highlighted that relevant questions should address direct involvement or case facts.

Regarding the case-file (polygraph case file records) analysis, although it brought a different perspective as most of the questions failed the standard as stipulated, the following statistics will help give a clear picture:

- Most of the questions addressed multiple issues
- They were accusatory and
- They were vague

Bennett and Hess (2007:184) were in agreement with Gordon (2009b:8) and APA By-Laws (2012) that question formulation, specifically the relevant questions, during the polygraph examination should adhere to the following criteria:

- Address direct involvement
- Answer to who, what, when, why, where and how
- Be straight forward
- Be clear and to the point
- Not accusatory
- No legal jargon
- Not vague
- Must not address two issues

3.12 SUMMARY

This chapter began with a discussion on the types of questions that should be asked during a criminal investigative polygraph test. The types of questions that are mostly used in polygraph testing were identified and the reasons examiners choose and use those questions provided. It was

also established that APA standards and ethics guide and direct the polygraph profession, irrespective of the location of the examiner.

Questions are also formulated according to the APA standards. Although the polygraph is not legislated in SA, it has a body that looks after its welfare in all countries across the world, including SA, which is the APA, and all polygraph schools that train polygraph examiners should be affiliated to or accredited by this organisation. Every examiner is bound to uphold these guiding standards for better service to the polygraph profession.

CHAPTER 4
FINDINGS AND RECOMMENDATIONS

4.1 INTRODUCTION

Evaluation of the questions used in a polygraph test: a case study in the Gauteng area" was the topic researched in this study. This is the chapter that concludes the research conducted. The research study focused on question formulation, and types of questions specifically asked during a criminal investigative polygraph test (also known as a criminal specific polygraph test).

Recommendations are made on the basis of the findings of this study. It was clear from the study conducted that if question formulation can be attended to and/or questions can be formulated correctly to address what is under investigation, the results can have a significant impact on crime combating and suspect identification based on the deception detected.

The sources were accessed to answer the following research questions, which also guided the study:

- What is a polygraph test?
- What are the types of questions that can be used during a criminal investigative polygraph test?

In this chapter, findings will be discussed, followed by recommendations and the identification of further information that warrants further study. The chapter ends with the conclusions drawn from the study.

4.2 PRIMARY FINDINGS

The following are the primary findings from the information collected from interviews, literature studies and personal experience on each of the research questions.

4.2.1 Research question one: What is the polygraph test?

- **Polygraph test**

The study confirmed the polygraph test as a truth-verifying process where a person is asked a series of questions with instruments/components attached to their body to monitor physiological changes or deception. In general, participants showed a great understanding of the concept.

- **Basic steps in conducting a criminal investigative polygraph test**

The study found that the basic steps of the polygraph test are the pre-test, in-test and the post-test steps. That these are the steps that are mostly followed was supported by most literature consulted and most participants (19 from Sample A and both of the Sample B experts). Participants who

differed argued that additional mentioned steps (data gathering and testing environment) make up a well-prepared and a successful polygraph test.

- **Training**

It was apparent during this study that training was still a challenge for both schools (The Academy for Scientific Investigative Training and the American International Institute of Polygraph); although requirements were in place they were not strictly followed or standardised. What was noted was that the directors of both schools have the last say on the admission requirements. It was further established that because they depended on the directors' decisions, these requirements were not necessarily standardised or upheld. This was disturbing as the polygraph profession is dependent on the level of training its members receive or have undergone to be successful, respected and for the polygraph examiner to be admissible expert during a trial whether at CCMA or Labour Court.

- **Admissibility of polygraph test evidence in court**

The study found that SA courts still regard polygraph test evidence as inadmissible. Moreover, it revealed that the polygraph profession, although controlled by two bodies in SA (PASA and SAPPA), is still not regulated. The study found that the evidence is, however, admissible in the LC and CCMA where it is supported by other supporting evidence. The research study further gathered that the NHPCSA still regards the polygraph instrument as unreliable and its test invalid. It further noted with great concern that this is a challenge that faces the polygraph not only in SA but also internationally. In some countries, including some states in the USA (where the polygraph was invented), polygraph evidence is still not admissible. Where it is admissible, certain strict requirements are in place. Participants shared the same sentiments with no contradictions.

4.2.2 Research question two: What are the types of questions that can be used/asked during a criminal investigative polygraph test?

- **The effect of the SA Constitution on the polygraph test**

The study gathered that all investigations conducted in SA must be in compliance with the SA Constitution (Constitution, Act 108 of 1996), which is the supreme law of the country. It further found that, although the polygraph test is a voluntary exercise, those subjected to the test (whether they had volunteered or not) should always be informed of their Constitutional rights as covered by section 35(1). This mainly covers the right to remain silent and to be informed promptly of the consequences (of not providing any explanation on the allegations) and the right to legal representation. Participants were divided on this subject as some (nine from Sample A) seemed to

think that if the subject volunteered to take the polygraph test there would be no violation of the SA Constitution.

- **Warnings that should be given to a suspect before undertaking a criminal investigative polygraph test**

The study established that warnings or rights as contemplated by the SA Constitution should be read to those subjected to polygraph testing and these include the rights to remain silent and to be informed of the consequences of remaining or not remaining silent and the right to legal representation. Participants mostly failed to come up with a formal warning but only mentioned the aspects that should be in the warning.

- **Types of questions that can be used/asked during a criminal investigative polygraph test**

The study found the types of questions that can be used during a criminal investigative polygraph test were the relevant, control, irrelevant, overall truth, symptomatic and sacrifice relevant questions. Most participants (thirteen from Sample A and both from Sample B) were able to identify these types of questions while others (ten from sample A) focused on the roles of the questions instead of identifying or labelling them.

- **Choice of questions during a criminal investigative polygraph test**

The study found that the polygraph examiner should first know the types of questions used during a criminal investigative polygraph test before they choose the questions to use in the test. The study revealed that polygraph test questions are chosen on the basis of what needs to be addressed and taking into consideration those to be tested (e.g. their emotional and mental conditions and level of understanding). The most notable findings were that the questions must be chosen to focus on what needs to be addressed; they must address a single issue, target the most serious offence, be phrased in simple and straight forward language and not be accusatory. Participants were in agreement with the choice of questions and showed great understanding, even though case file analysis did not reveal the same reflection of their (polygraph examiners) understanding.

- **Problems experienced in developing questions for use during a criminal investigative polygraph test**

The study found that there were general problems experienced by polygraph examiners when developing questions for a criminal investigative polygraph test. Among those identified in the literature were that in most instances polygraph examiners fail to gather enough information on each case (case facts) and fail to prepare well enough before the initial test. They show poor targeting of the relevant issue and therefore address too many issues at once. Their inexperience or

incompetency means that they formulate questions poorly and succumb to pressure from clients. Participants highlighted the same challenges as problems experienced with no contradictions. File analysis also confirmed the challenges as indicated, as most of the questions did not conform to the norm as expected by APA standards.

- **Suggested training or solutions to resolve the problems experienced during questions formulation**

The solutions suggested by the sources consulted were mainly that examiners should use standardised techniques as prescribed by the APA for each specific test. They should formulate questions according to the guiding standards, address what is under investigation, and target a single issue. Continued education with strict mentorship was of utmost importance.

- **Guiding standards for formulating questions for a criminal investigative polygraph test**

The study found the guiding standards for question formulation to be the following:

- Obtain full information before the test
- Thoroughly prepare for successful results
- Target the main issue (what needs to be investigated)
- Formulate test questions based on what needs to be investigated
- Address a single issue
- Formulate questions that are clear and not accusatory
- Avoid using legal jargon

Participants were in agreement regarding guiding standards with no contradictions. File analysis, however, mostly did not confirm the information as provided.

4.3 SECONDARY FINDINGS

The following are the secondary findings based on information as collected for this study through literature studies, interviews, case file analysis and personal experience.

- **Purpose of the polygraph test**

From the literature, the study gathered that the purpose of the polygraph test is to determine truthfulness of an individual regarding the issue under investigation. The responses provided by the participants supported the literature finding. The researcher can also confirm this purpose from personal experience.

- **Circumstances where the polygraph test can be used as a technique/tool**

It was discovered that the polygraph instrument is an investigative tool utilised to close gaps where missing information has been detected. The study further revealed that the polygraph test is mostly used during criminal specific investigations, random screening of employees and pre-employment. The participants rightly indicated the circumstances with no contradictions. Personal experience can also confirm the information gathered.

- **Effectiveness of the polygraph test**

The study revealed and confirmed that the polygraph test is as effective as the person who does the test. It further revealed that the test is also dependent on the state of health of those tested, the technique used, the questions asked, clear targeting of the test or relevant issue and, most of all, careful preparation by the examiner. All participants confirmed and supported the information as collected. Polygraph case file records analysis also revealed that of the thirteen polygraph case file records analysed, only two where all of the above requirements were adhered to and the results were positive (confirming their effectiveness).

- **Factors that influence the outcome of the polygraph test**

It was gathered during this study that the outcome of the polygraph test is influenced by factors such as the medical condition of the examinee, the questions asked, technique, the issue targeted and, particularly, examiner competency. It was further gathered that countermeasures (as explained under 2.8 that these are deliberate attempts or efforts by the subject being tested, designed to mislead, with the intention of making the examiner believes they are telling the truth on the issue under investigation) also influence the outcome of the polygraph test. The participants were again able to indicate the same factors as collected from literature without any conflict.

- **Suspect**

The literature study revealed that a suspect is someone who is directly or indirectly linked with the commission of the crime under investigation by either being involved in or having planned its occurrence. The participants' opinion confirmed this definition.

- **Those to be present during the polygraph examination**

It was gathered during this study that the polygraph test process is successful when conducted between the examiner and the examinee only. Its success is totally dependent on privacy, according to the information collected from the literature review. However, the literature also revealed that the polygraph test can be challenged by the presence of either a legal representative as requested by the examinee or an interpreter.

The study uncovered (from most literature and participants) that the interpreter should be accommodated only if there is a language barrier between the polygraph examiner and examinee. The interpreter should be requested not to interfere with the test in any way apart from providing assistance as requested. The legal representative can be accommodated in a room adjacent to the testing room equipped with video and audio recordings to view the proceedings from there.

There was a clear division between the views obtained from the literature and both samples on the above matter in that participants were less inclined to allow other people into the test room. There were those (six from Sample A) who supported the presence of the polygraph examiner and examinee in the testing room, some supporting the presence of the interpreter only and two (from sample A) supporting the presence of an interpreter with a polygraph background. However, most (fifteen from Sample A and both from Sample B) supported the presence of the interpreter where there is a language barrier and believe that the legal representative may be accommodated in another room equipped with both video and audio recordings to view the proceedings.

- **Interpreters**

The study uncovered that interpreters are a bridge between two worlds in terms of languages, as they translate orally for parties that converse in different languages. Their interpretation ensures that the parties understand each other. The role of the interpreter in the polygraph testing situation is acknowledged; hence, they should be allocated a space in the process (where there is a language barrier) with the requirement that they provide assistance as requested.

- **Testing environment/venue**

The study found that the testing environment or venue is a condition or place where the normal test is conducted. It is regarded as a step during polygraph testing as the examiner goes to great lengths to prepare it and ensures that it is a suitable location with no possibility of disruption. It is therefore an important step as a normal test cannot take place if attention has not been given to the environment. Personal experience by the researcher can also confirm that proper preparation and the location of the testing environment go a long way in ensuring successful results of the polygraph test.

4.4 RECOMMENDATIONS

This study was undertaken to uncover information on the evaluation of the questions used in a polygraph test. The aims were to research the types of questions that can be used and how they can be formulated and chosen during a criminal investigative polygraph test. It can be confirmed by the researcher therefore that the aims were researched and relevant information uncovered.

The recommendations are made on the basis of the contradictions uncovered about information collected or where there were total disagreements or no satisfying information was uncovered from the sources consulted. A refresher course is recommended on the following topics:

- Effect of the Constitution
- Warnings
- Types of questions
- Choice of questions
- Problems experienced in question formulation
- Guiding standards

Since training in question formulation was found mostly to be a challenge, the following further recommendations are made:

- APA and polygraphy associations in SA should tighten their rules to deal with unaccredited polygraph schools
- Those polygraphists trained by these unaccredited institutions should be barred from practising as polygraph examiners and harsher sentences imposed on those found guilty
- APA in consultation with the polygraph schools should set up standards that must be upheld as a norm or level for one to become a polygraph examiner as the study revealed that there was confusion (as some polygraph schools do not follow strict rules on minimum qualifications for one to be admitted for training as a polygraph examiner).

- **Basic steps**

Further training or yearly refresher courses by the polygraph schools responsible to all practising examiners, may assist in dealing with the basic steps of conducting a polygraph test. Intense training is also recommended in relation to the following:

- Constitutional rights of those subjected to polygraph testing
- Formal warnings administered before the test
- Types of questions and how they can be chosen
- Problems experienced in question formulation to further give guidelines on formulating questions

- **Those to be present during the polygraph examination**

This study clearly discovered that there were some great conflicts on who should be present or accommodated during a polygraph examination. It is therefore recommended that clear guidelines be developed (by APA) as to who may or may not be accommodated. These guidelines should specify the qualifying factors for accommodating external role players in the test process to do away with the confusion discovered during this research.

Further study is recommended, as the researcher feels not enough information was gathered on:

- The effect of the SA Constitution on the rights of those taking a polygraph test
- Admissibility of polygraph evidence in SA courts and its implications
- Question formulation for a polygraph test

4.5 CONCLUSION

The study was centred on the evaluation of the questions used during a polygraph test. It was clearly revealed that question formulation for a successful polygraph test is a challenge that results in inconclusive test results, as identified during case file analysis. In the course of the study it became clear that before one is able to make a choice of which questions to use, one should know the types of questions best suited to polygraph testing. Some participants had little knowledge about the types of questions but could identify (choose) the roles played by particular types of questions.

Although participants were familiar with many of the concepts used in the polygraph profession, as practitioners in the polygraph field it is expected of them to keep up with the latest information that relates to their field of performance to ensure the successful outcome of the tests they conduct. Continuous education or further training is therefore encouraged to convince critics of the polygraph's contribution in crime combating in SA and elsewhere.

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ANNEXURE A

INTERVIEW SCHEDULE for participants

Participant No…….

EVALUATION OF THE QUESTIONS USED IN A POLYGRAPH TEST

You are kindly requested to answer the questions in this interview schedule which the researcher will ask you. The questions, responses and the results (research project) will be kept confidential and no names of participants (polygraphist) will be revealed.

The researcher is bound to his assurances and guarantees as prescribed by the ethics code for research of the University of South Africa. The information you provide will be used in a research project for Master of Technology degree registered with the Program Group Police Practice at the University of South Africa. The analyzed and processed data will be published in a research report.

Your answers will be captured on paper by the interviewer himself. Should any questions be unclear, please ask the researcher for clarification. Only one answer per question is permissible. When answering the questions, it is very important that you give your own opinion.

Written permission has been obtained from the Civilian Intelligence (SSA) and SANDF in advance for the interviews to be conducted.

I (Name……) understand the purpose of the interview and consent to be interviewed.

……. Signature (Interviewee) Date……..

A. Background

This section focuses on general information. I would like to know something about your background as a polygraphist (polygraph examiner).

1. Are you a polygraph examiner?

Yes No

2. If yes, for how long have you been a polygraph examiner?

1 – 5 years 5 – 10 years 10 years and above.

3. Did you do the Basic Polygraph Course?

Yes No

4. Are you currently conducting polygraph tests?

Yes No

B. What is a polygraph test?

1. Describe according to your understanding what polygraph test is?
2. What is the purpose of the polygraph test?
3. What are the basic steps in conducting a criminal investigative polygraph test?
4. Under which circumstances will the polygraph test be used as a technique/tool?
5. Is the polygraph test effective?
6. What training should one undergo to become a polygraph examiner?
7. What are the factors that influence the outcome of the polygraph test?
8. Is polygraph test evidence admissible in court?
9. What are the objectives of using the polygraph test as a technique?

C. What are the types of questions that can be used/asked during a criminal investigative polygraph test?

1. What is a suspect?
2. Who should be present during the polygraph examination?
3. What is the effect of the SA Constitution on the polygraph test?
4. Which warnings should be given to a suspect before undertaking a criminal investigative polygraph test?
5. How are questions chosen during a criminal investigative polygraph test?
6. What are the types of questions that can be used/asked during a criminal investigative polygraph test?
7. How are questions developed for use during a criminal investigative polygraph test?
8. What problems have you experienced in developing questions for use during a criminal investigative polygraph test?
9. What training or solutions can you suggest for resolving the problems you experienced during question formulation?
10. What are the guiding standards for formulating questions for a criminal investigative polygraph test?

ANNEXURE B

CONSENT LETTER to participants

Informed consent for participation in an academic research study

Title of the study

Evaluation of the questions used in a polygraph test"

Research conducted by:

Mr M. Gabela

Cell: 072 756 5301

Sir/Madam

You are invited to participate in an academic research study conducted by Muziwandile Gabela, Master of Technology student with the Programme Group Police Practice under the Supervision of Dr Nick Olivier at the University of South Africa (UNISA).

The objectives of the study are as follows:

- To research the types of questions that could be asked during a criminal investigative polygraph test by looking at both their strong and weak points.
- Strong points will be improved and the weak points strengthened.
- As well as how these questions are formulated during a criminal investigative polygraph test.

Please note the following:

- This study involves a list of questions which I need to ask you. Your name will not appear in any way on the research and the answers you give will be treated as **strictly confidential**. You cannot be identified in person based on the answers you give.

- Your participation in this study is very important to me. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- The results of the study will be used for academic purposes only and may be published in an academic journal. I would be most willing to provide individual feedback, should you find that this may be helpful to you.

Thank you for your time

Please sign the form to indicate that:

- You have read and understood the information provided above.
- You give your consent to participate in the study on a voluntary basis.

_____ _____

Participant's signature **Date**

ANNEXURE C

PERMISSION LETTER FROM NIA, NOW SSA

intelligence

National Intelligence Agency
REPUBLIC OF SOUTH AFRICA

NIA/IS33/1/1/6 Internal Security (IS33)

06 August 2009

Director-General EM10
Deputy Director General EM30
General Manager IS10

Submission: Permission to conduct research interviews: NIA Polygraph Examiners: Mr M Gabela (70996-89) IS33.

1. Purpose

1.1. The purpose of this letter is to obtain permission and approval for Mr M Gabela to conduct research interviews on NIA Polygraphists (Polygraph examiners) for a research project for a Master of Technology degree (Forensic Investigation) registered with the Program Group Police Practice at the University of South Africa (Student No.36786632).

2. Urgency

Before the research interviews can be conducted an approval need to have been granted according to NIA/IM30/1/1/6, utilization of Agency information for study purposes (Interim prescripts and procedures). Research interviews are scheduled to take place as soon as this permission is granted which should be immediately after an approval of this letter. Respondents have indicated their availability for the interviews.

3. Executive Summary

3.1. Mr M Gabela is a student registered with Unisa for 2009 academic year for Master of Technology degree in Forensic Investigations with the Program Group Police Practice under the Supervision of Dr Nick Olivier.

Mr Gabela is also a Polygraphist and a member of the Agency. The research aims at gathering information on an evaluation of questions during polygraph tests. Information gathered will be analyzed, processed and published in research report for study purpose.

File Reference : NIA/IS33/1/1/6
Compilation Date: 06 August 2009

Permission to conduct research interviews: NIA Polygraph Examiners: Mr M Gabela (70996-89) IS33.

9. Regulatory Compliance

According to the interim prescripts and procedure (NIA/IM30/1/1/6) utilization of Agency information for study purpose, the Director General (Head) NIA can grant appropriate authorization. See pro-forma document for application as to the above effect.

10. Other parties consulted

Mr Piet Strauss

11. Compiler

Mr M Gabela
Polygraph Examiner
Tel No. (012) 427 5198

Approved/~~Not Approved~~

LG Njenje
Head NIA

Date: 2009.11.18.

Confidential

ANNEXURE D

PERMISSION LETTER FROM SANDF

30/09/2009 10:03 0123556016 CSANDF PAGE 01/01

the sandf
RESTRICTED
Department:
Defence
REPUBLIC OF SOUTH AFRICA

R/101/8
Vol 2 P939

C SANDF/R/202/3/7/333511

Telephone: 355-6002
Fax: 355-6023
e-mail: csandf@mil.za
URL: www.mil.za
Enquiries: Brig Gen G.S. Sizani

Chief of the South African
National Defence Force
Department of Defence
Private Bag X414
Pretoria
0001

07 September 2009

Mr M. Gabela
P.O. Box 1292
Pretoria
0001

PERMISION TO CONDUCT RESEARCH INTERVIEWS

1. - Your letter dated 04 August 2009 has reference.

2. Permission is hereby granted to Mr M. Gabela to conduct research within the Department of Defence on "An Evaluation of the questions used in Polygraph Tests".

3. On completion of the research, the final product must be submitted to Defence Intelligence (SDCI) for scrutiny and authority for release before distribution to any organisation or individual outside the Department of Defence.

4. Contact Brigadier General A.C. Smit on 012 326 3246 for more information.

(BRIGADIER GENERAL G.S. SIZANI)
CHIEF OF THE SOUTH AFRICAN NATIONAL DEFENCE FORCE, GENERAL

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